

A HISTORY OF
THE
INSTITUTE OF
BREWING.

BIRD (WH)

CFTRI-MYSORE



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GIFTED IN THE MEMORY OF
MR. M. V. SHIRSAT M. SC.
101 B, Prakash Nagar,
Mogul Lane, Mahim,
BOMBAY-16.

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By

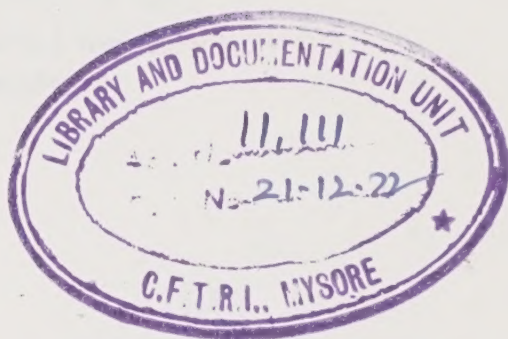
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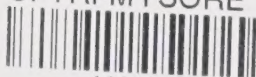
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FOREWORD

As the senior surviving past President and one of the few remaining original members of the Institute, I have been asked to contribute a short foreword to the story written by Mr. W. H. Bird.

The history of the Institute is the story of the gradual application of science to the fermentation industries and the development of co-operation between the scientist and the operative brewer responsible for the operations in the brewery and the quality of the beer.

When I entered the industry in 1888 as a pupil, the firm to whom I was articled undertook to teach me not the science but the "mystery and art" of brewing. Though many scientists, headed by the great master Pasteur, had applied themselves to the study and the research of fermentation problems, the need for a more complete understanding of the principles underlying their operations was not recognised by the general body of brewers; there were even some technical brewers who still utilised thermometers with secret scales and kept their brewing books in cypher and under lock and key! As a matter of fact the traditional comment of the old craftsman "Mr. Chemist you know everything, I only know one thing—I know you are wrong" was not always as absurd as it would appear to-day; since owing to the lack of close co-operation the scientist did not always appreciate either the experience or the practical difficulties of the operative brewer.

But even in those days the need for some knowledge of chemistry and biology was beginning to be realised and it was becoming general for the young practical brewer to spend a few months under the tutelage of one of the consulting chemists to gain some insight into the principles underlying his work. This, however, in practice, generally did not extend beyond a knowledge of the analysis of materials and sufficient micro-biological practice to enable him to exercise a rough-and-ready control of the materials used, the process of brewing and fermentation and the observation of the after-history of his beers.

The pupils of Edward Moritz who recognised the need for exchange of opinions and knowledge and, under his inspiration, formed the

Laboratory Club, laid the foundation upon which the regional Institutes of Brewing were founded in different parts of the country. These were federated in 1904 on a national basis to become the representative body on all technical matters connected with the brewing industry as opposed to the Brewers' Society, the commercial organisation, which curiously enough dates its inception in its present form from the same year.

During the fifty years of its activity the two outstanding features of continuing importance are probably the Examination Scheme and the Research Scheme. Both of these were envisaged by the founders as far back as 1898, but it was not until after the first world war that either came to fruition.

The Examination Scheme, which lifted the calling of the technical brewer from a craft to the dignity of a profession, was championed by Julian Baker and guided to its adoption by the commanding diplomacy of Francis P. Whitbread in 1915. Owing to the war, however, the first examination had to be delayed until 1922. The Research Scheme, pressed forward by many, amongst whom Edwyn Barclay was prominent, was established by funds secured on a voluntary basis during my own year of presidency in 1919, but it was not until 1946 that the Brewers' Society guaranteed a sufficient income to the Research Fund to make possible the purchase of Lyttel Hall and the establishment of a research centre worthy of the brewing industry.

The historian of such a body as the Institute is faced by the difficulty of choosing either a review of its activities in chronological order, which hardly gives a clear picture of the development of any one phase of its activities; or, on the other hand, a series of chapters each recording a separate section of work. This again has the disadvantage of being a disjointed series of separate articles. Faced with this problem, Mr. Bird has compromised between the two and has succeeded in giving us a comprehensive record of what the Institute has accomplished with fuller reference to the details of its more important activities.

This history, collected and written by Mr. Bird, is not only a survey of the Institute as such, but is also a record of the work of those many who, over the years, have contributed unselfishly to the advancement of the brewing industry, an industry which constitutes a material

element in the fabrics of British industry and National economy, and has been shown in the emergencies of two world wars to have an important bearing on public contentment and productive efficiency.

Past and present members of the Institute will be deeply grateful to Mr. Bird for the time and trouble taken by him to compile this volume, quite apart from owing him a great debt for his work as Secretary of the Institute for forty-three years. For a generation and a half, Mr. Bird gave his unstinted service to the Institute, and it is very largely due to his efforts that it has risen from the small beginnings of 1904 to its present status. Nobody, could have been better qualified to write this History than one who had played a central part in it for so long, whose services the Institute recognised on his retirement by election to Honorary Membership.

SYDNEY O. NEVILE.

March, 1955.

PART I

THE IDEA IS BORN

1886-1903

This first chapter covers the period 1886 to 1903 and deals with the early history of The Institute of Brewing before the amalgamation of the provincial institutes with the parent body, the Institute of Brewing (London). During these formative years, the arguments on the legitimate aims of an Institute of Brewing were resolved. Some thought that the Institute should maintain an establishment for consultative and analytical practice; others that it should itself become a teaching organisation. The view which eventually prevailed was that the true function of an Institute of Brewing was the promotion, and diffusion among those interested, of technical knowledge concerning the brewing and allied industries.

Great Britain is particularly rich in societies which exist for the advancement of science; that is to say, for the acquisition and dissemination of systematised knowledge in general or particular.

By far the oldest and most famous of such bodies is the Royal Society which was founded in the reign of King Charles II for the advancement of science generally. It was followed during the succeeding century by the foundation of one or two institutions of great importance—the Royal Institution of Great Britain came into being in 1799—but it was not until the nineteenth century that a wide impetus was given to the establishment of institutions for the study and promotion of particular branches of science, and especially industrial science.

The impact of the industrial revolution, the flow of new inventions and discoveries which followed one another in almost bewildering profusion, the eager thirst for knowledge which distinguished the century and led, among other things, to the Great Exhibition of 1851—all these played a part in this development. Side by side with it, too, there was an enormous increase in facilities for scientific training in universities and colleges, marked in many cases by the establishment of professorial chairs.

In this stimulating and beneficent atmosphere The Institute of Brewing had its earliest beginnings.

The concept of the Institute dates back as far as 1886, although it was not formed until some years later. Like many other British organisations of the kind it grew from small beginnings.

One of the leading brewing consultants of the 'eighties was Dr. E. R. Moritz. Born in 1860, he received his early scientific training at the Royal School of Mines, subsequently studying in the Universities of Bonn and Göttingen, at the latter of which he graduated as Doctor of Philosophy. Returning to England, he became first assistant to and later partner with Dugald Campbell, the then consulting chemist to the Country Brewers' Society. On Campbell's death in 1882, Moritz set up on his own account.

Four years later he was appointed consulting chemist to the Country Brewers' Society, which position he held until his retirement in 1925.

For forty years, until his death in 1931, Moritz was an outstanding figure in the brewing world. Many brewers owe their successful careers to the inspiration they caught from him when pupils in his laboratories. And to him The Institute of Brewing owes its existence.

THE LABORATORY CLUB

It was Dr. Moritz's custom to gather round him a few of his pupils for informal discussions (usually held in a long-since-vanished coffee house in Fitzroy Square). Out of these meetings grew the Laboratory Club. The main purpose of this body was to bring together for the exchange of knowledge members of the brewing industry engaged either in scientific or practical work.

At its inception in 1886 the Laboratory Club could boast of no more than ten members. Four years later the membership had grown to about 250 and the club was firmly established on a solid and enduring basis. It was at this date that it adopted the new title of the Institute of Brewing.

The value of an organisation of this sort to the brewing industry was quickly apparent. Similar bodies were accordingly soon formed in other parts of the country. In 1891 the North of England Institute of Technical Brewing was born; in 1893 there followed the Yorkshire and North-Eastern Institute of Brewing; and the Midland Counties Institute of Brewing was established in 1894.

FEDERATION OF THE INSTITUTES

In the earliest days of their history each of the four institutes published its own transactions in pamphlet form, following the practice already set up by the Laboratory Club. In the eight years to 1894 over eighty original papers were published covering a large number of subjects connected with the art or science of brewing or the efficient administration of a brewery. In 1894, however, Dr. Moritz put forward a scheme for the federation of the four institutes for the purpose of

THE IDEA IS BORN, 1886-1903

publishing a journal in common. This idea met with general approval and the year 1895 saw the formation of a Central Council on which each separate Institute was represented.

THE CENTRAL COUNCIL

The Central Council continued to function until 1903 when, as will be seen later, the four organisations surrendered their individual identities and merged into one. It had no habitation of its own and its meetings were generally held on the premises of the Country Brewers' Society in Westminster, by the courtesy of that body.

During the Council's existence it had five presidents—Mr. Frank Wilson (1895-6), Mr. Arthur C. Tanqueray (1897-8), Mr. H. Graham Aldous (1899-1900), Mr. John M. Hanbury (1901) and Mr. C. H. Babington (1902-3). Dr. E. B. Pymar, M.A., combined the offices of Honorary Secretary and Honorary Treasurer while the Editor of the new journal, now entitled "The Journal of the Federated Institutes of Brewing," was Mr. A. R. Ling.

Between 1895 and 1903 there were published in the Journal some 180 original papers, as well as abstracts of articles of interest to the trade appearing in other publications. It may be of interest to record that the first paper to be printed was entitled "On a case of bacterial infection by air-sown organisms : a practical study". Its joint authors were Dr. Horace T. Brown, F.R.S., and Dr. G. H. Morris.

PLANS FOR DEVELOPMENT

In the course of time it became increasingly apparent that the work of the Federated Institutes could be enlarged and developed, particularly with regard to research and to the education of the operative brewer, with corresponding advantages to the brewing industry. Before, however, any such plans could be put into operation it was necessary to enlist the support of the industry as a whole and to find the considerable sum of money that would be needed. An "Appeal Committee" was accordingly appointed early in 1896 by the Central Council to consider how the necessary funds could best be obtained.

In due course this Committee made its recommendations. These were that a new body, to be called the "Institute of Brewing" should be established under the Literary and Scientific Institutions Act of 1854; that the first members of the new Institute should be those of the four existing Institutes, which should become Sections of the Institute of Brewing, although retaining certain powers of local management; and that the Central Council of the Federated Institutes should be superseded by a new governing body to be elected by the Sections.

By taking advantage of the provisions of the Act of 1854, this governing body would secure a definite legal status and acquire the right to own property.

The next step was to draft and approve rules for the conduct of the proposed new Institute, and it was at this point that the first signs of a division of opinion among the members of the Federated Institutes became apparent. A majority on the Central Council was in favour of restricting the activities of the new Institute to exclude any professional teaching or the setting up and use of premises for consulting or analytical practice.

Thus it soon became obvious that the time was not yet ripe for agreement throughout the industry on the scope and functions of the proposed institute. On the one side stood the Institute of Brewing (London) and the Yorkshire Institute, both of which approved the Committee's proposals; on the other side were ranged the Midland Counties' Institute, which had stressed the need for a school of brewing as a substitute for the teaching work carried out by individual members and the North of England Institute.

Faced with these opposing views, the Central Council felt that it had no alternative but to abandon the proposals.

This setback did not, however, lead to a cessation of the efforts towards amalgamation and the formulation of a common policy. Undeterred by the failure of the Central Council's proposals, the Institute of Brewing (London) decided to promote a scheme of its own on lines calculated to be agreeable to the generality of its membership and not to conflict with the interests of individual members. Behind this new move was the feeling that, if a general standard of knowledge to be acquired could be agreed upon, the facilities needed to enable prospective brewers to reach that standard would follow as a natural course.

EDUCATIONAL SHORTCOMINGS

That there was a feeling throughout the industry that education and training in the science and art of brewing needed drastic improvement is implicit in the discussions of this period in the Institute's history. A paper, published in 1898 under the authorship of Dr. William Frew and entitled "The Education and Training of Brewers", summed up the alleged shortcomings in the preparation of the brewer for his life's work.

In the first place, it was suggested that there was no guarantee that the entrant to the industry would have had an adequate education to enable him to make a proper use of the specialised knowledge which

would be imparted to him during his pupilage. The type of school from which entrants were generally drawn could not be relied upon to provide education of a high enough quality, nor even of the right kind to suit the brewer's requirements. Secondly, when the would-be brewer had entered the industry, education for his job in many cases left much to be desired. Theoretical training was usually given at the wrong time and was not preceded, as it should be, by a term of practical work in malthouse or brewery; while practical education was neither continued for a long enough period nor was it sufficiently varied. Finally, the criticism was made that the range of studies was too limited to be of real use to the pupil and that the young brewer was often taught "brewing chemistry" before he had grasped the elements of chemical science.

The Institute's scheme sought to satisfy these criticisms. Its principal objects were five in number:—

"1. To establish in London a suitable habitation consisting of a Meeting and Lecture Hall (with Laboratory), a Reading Room and Library (both for reference and other purposes), Committee Rooms and Offices.

"2. To assist in the enlargement and general improvement of the Journal.

"3. To secure the necessary standard of knowledge and tuition among brewery pupils by the establishment of an examining board of scientific and practical men (two members of which shall be annually nominated by the Brewers' Company, two by the Country Brewers' Society* and four by the Committee of the Institute of Brewing) and by the granting of certificates and diplomas, and by the founding of Scholarships, upon such conditions and for such purposes as the Institute may from time to time determine.

"4. To arrange and provide for the delivery of lectures by eminent scientific men (both English and foreign) in special subjects.

"5. To encourage experimental research, whether conducted in the laboratory of the Institute or elsewhere, and to provide for travelling studentships, having similar objects in view."

When the scheme was submitted to the Institute's members for approval at an extraordinary general meeting held on June 7th, 1898, discussion centered on the third of these proposals. The advocates of the setting up of a school of brewing returned to the attack and tabled an

* The Country Brewers' Society, founded in 1822, combined with the London Brewers' Association and the Burton Brewers' Association in 1904 to form the Brewers' Society, which now represents the whole industry.

amendment to the effect that, in substitution for this clause, the meeting should approve a motion "to co-operate with and assist any body of brewers in establishing a School or College of Brewing in London or elsewhere, which shall provide a scientific and practical education in brewing and all subjects bearing thereon."

A vote was taken and the amendment was defeated by 27 votes to 16. By a slightly larger majority the original motion approving the scheme was carried.

AN APPEAL FOR FUNDS

It was estimated that a sum of £30,000 would be needed properly to carry out the scheme and provide suitable premises in London. With the approval of the Brewers' Company which promised an annual donation of £100 for five years, and of the Country Brewers' Society, the London and Yorkshire Institutes jointly issued an appeal for funds. Only a promise of donations was asked in the first place and it was agreed not to call in the money until a sum of at least £20,000 had been promised.

At this time there were about 2,000 breweries operating up and down the country and the membership of the Federated Institutes amounted to 923. Of this total, the London Institute accounted for 546 members, the North of England Institute 128, the Yorkshire and North-Eastern Institute 108 and the Midland Counties' Institute 141.

The appeal for donations to the Development Fund met with a disappointing response for which the South African war must certainly be held partly responsible. By March, 1900, when, owing to the effects of the war, the duty on beer was raised, only about £7,000 had been promised. It was decided, therefore, to drop the appeal.

A further step, however, towards the establishment of a completely representative Institute was taken in the same year by the amalgamation of the London and Yorkshire Institutes. This took effect from January 1st, 1901, when the Yorkshire body became a section of the Institute of Brewing, with an area covering the counties of Yorkshire, Lincolnshire, Durham, Northumberland, Cumberland and Westmorland.

Meanwhile, in London, the Brewers' Company had offered the Institute the use of their Hall for lectures and meetings, following up this generous offer by placing at the Institute's disposal two rooms in Brewers' Hall for use as a library, reading room and office. The London brewers subscribed a sum of £1,000 to furnish and equip these rooms, for which only a nominal "rent" was charged to cover heating, lighting and cleaning. And so the Institute had a "home of its own".

THE IDEA IS BORN, 1886-1903

A SCHOOL OF BREWING AT BIRMINGHAM

About the same time, a movement which was on foot to establish a University in Birmingham showed promise of being successful. The promoters of the projected University planned to raise the necessary funds by an appeal to the industrial and commercial community of the Midlands, each great industry being invited to identify itself with some special department or chair of the new University. The response was generous, and the brewing industry of Birmingham was among the first to take advantage of this offer. It immediately promised to subscribe the sum of £20,000 for brewing education. Thus, the "British School of Malting, and Brewing" came into being as a department of Birmingham University. The school was formally opened by Mr. H. Cosmo O. Bonsor, M.P., on January 18th, 1900, and Professor Adrian J. Brown, F.R.S., was appointed its first director.

Professor Brown, who was born in Burton-on-Trent in 1852, received his scientific training under Professor Hofmann at the Royal School of Mines. His original intention was to take up mining, but, the opportunity occurring, he accepted the post of private assistant to Dr. W. J. Russell, F.R.S., the then Lecturer on Chemistry at St. Bartholomew's Hospital. In 1873 Adrian Brown became Chemist to Thomas Salt & Co. Ltd., of Burton-on-Trent, remaining with that firm until his appointment to the Chair of Malting and Brewing in the University of Birmingham. Professor Brown, in addition to his professorial work, took a large share in the administrative and scientific work of the Institute and other bodies. He was for some time Examiner in Biological Chemistry to the Institute of Chemistry and was President of The Institute of Brewing from 1917 until his death in 1919. He was elected a Fellow of the Royal Society in 1911. During the years 1890 to 1917 a number of valuable papers appeared under his name in the Journal of the Institute and elsewhere.

WIDENING OF MEMBERSHIP

The original qualification for membership of the old Laboratory Club and its successor had ensured that the applicant for election would be engaged on scientific or practical work in the trade. In 1902, the scope of membership was widened, the Institute being empowered to invite for election to membership "such persons on the staff of breweries as (in the opinion of the Committee) it would be in the interests of the Institute to admit".

ANALYSIS OF BREWING MATERIALS

In the same year some attempt was made to introduce methods of standardising the results of analyses of brewing materials. A committee

was appointed by the Institute to consider the question. Its report, however, was negative, for a majority of its members took the view that it was difficult, if not impossible, to lay down hard and fast methods of standardisation of the results of analyses in the case of such complex organic bodies as were met with in brewing materials; nor, indeed, did the Committee think that progress would be furthered by the adoption of a uniform system.

AMALGAMATION OF THE FOUR INSTITUTES

The next year, 1903, is a momentous one in this History, for it rewarded the efforts which had been made for so long to bring about the amalgamation of all the existing Institutes. The scheme was approved at Extraordinary Meetings held individually during December, 1903, by the three institutes and by the Yorkshire and North-Eastern Section of the London Institute.

Thus the new Institute of Brewing, with four sections, was established on January 1st, 1904. Mr. C. H. Babington was elected as its first president.

Mr. Babington, who was a director of the firm of Watney, Combe, Reid & Phillips, had taken a leading part in the negotiations which led to the birth of The Institute of Brewing. After his year of office as President, he was elected a Vice-President of the Institute and retained a seat on the Council until his death in 1951. In 1936 he was elected an Honorary Member in recognition of his eminent services.

During his long and distinguished connection with the brewing industry, Mr. Babington was, at different times, Master of the Worshipful Company of Brewers, Chairman of the Brewers' Society, President of the Licensed Victuallers' Benevolent Institution and President of the Metropolitan Beer and Wine Trade Asylum.

PART II

THE EARLY YEARS

1904-1918

The first fifteen years of the life of the new Institute of Brewing saw its growth to national status and its gradual recognition as the technical association of the brewing industry. The first World War also occurred in this period and created its own peculiar problems for the industry.

RULES AND OBJECTS

The chief objects of the newly formed body, The Institute of Brewing, as defined in its Rules which came into force on January 1st, 1904, were as follows :

“The promotion of such sciences and arts as are, or may be deemed to be, capable of practical application to brewing, malting, distilling, vinegar making and other allied industries and trades.

“The diffusion among persons interested in the above-mentioned industries and trades of scientific and other knowledge practically and theoretically useful in connection with such industries and trades.”

To facilitate the successful pursuit of these purposes, the Rules embodied a number of other objects. These covered the provision of means of intercourse between the scientific and practical members of the industries concerned; the amalgamation of kindred organisations in the United Kingdom with the Institute; the provision and maintenance, for the use of the members, of premises in which could be located assembly rooms, libraries, laboratories and offices; the arrangement of lectures; and the promotion of scientific investigation and research. Finally, in order to carry out its work, the Institute was empowered to purchase, hold and dispose of “real and personal property of every kind”.

These objects were in conformity with those outlined for similar organisations by the Literary and Scientific Institutes Act of 1854.

MEMBERSHIP

The Rules provided for the election of the following persons as ordinary members of the Institute :— brewery proprietors, directors of brewery companies, brewery managers, brewers, distillers, vinegar brewers, maltsters, brewers’ analysts, pupils of any of the foregoing,

and students of public brewing schools. Provision was also made for members of any Institute amalgamating with The Institute of Brewing to become ordinary members as from the date of amalgamation; and the Council was given authority to invite for election such other persons on the staff of breweries as it might be in the interests of the Institute to admit.

The scope of this last provision was widened in 1906 when, at the Annual General Meeting, it was resolved to give the Council authority also to invite for membership members of trades and professions closely allied to brewing, if the membership of such persons was thought to be in the interests of the Institute. Four years later, however, this provision, together with the original "invitation-to-membership clause" covering brewery staffs, was cancelled and the following categories were added to the list of people eligible for membership of the Institute: artesian well borers, distillery managers, secretaries of brewery and distillery companies, hop growers, architects and engineers, and distillers' and maltsters' chemists. Any member ceasing to hold the qualification by virtue of which he had been elected was automatically disqualified from membership.

The wisdom of this liberal rule which opened membership of the Institute to so many of those employed in technical capacities, or training for such employment, in the brewing and allied industries, has been reflected in the character of the Institute itself. It has helped to give it the breadth of vision and depth of understanding which have served to keep its development on sound lines.

Additional Members

Three further classes of membership were created in 1915 to cover diploma, associate and student members, respectively. Diploma membership was confined to persons who had been engaged in practical brewing for a minimum period of six years. For associate membership the qualifying period was one of only two years. Persons applying for election in either category were required to pass an examination after a specified date, although the Council could, in certain cases, waive this rule.

At first, all new candidates for diploma and associate membership had not only to satisfy the Council that they had served the necessary qualifying period in each case, but also, at the date of application, had to be connected with a brewery as operative brewers* or be still actively engaged at a brewery as their principal occupation. This

* The following definition of an "operative brewer", submitted by Mr. Sydney O. Nevile had been accepted by the Council in 1913: "an operative brewer is one who derives the major part of his income from operative work as a brewer in a brewery".

THE EARLY YEARS, 1904-1918

occupational qualification did not, however, apply to those who were members of the Institute on January 1st, 1915, and who could prove sufficient terms of practical experience; such persons, it was decided, should qualify as diploma or associate members without regard to their occupation in 1915. Five years later the occupational qualification clause was finally waived for all new candidates for membership, and all persons who had been engaged in practical brewing for not less than six or two years, respectively, were considered to be eligible for election to diploma or associate membership as the case might be.

Meanwhile, during the period from February 20th, 1915, to the end of 1918, 621 candidates were elected to diploma membership and 42 to associate membership on the grounds of experience only.

Student membership covered persons under twenty-one years of age who were engaged "in the study of the principles and practice of the Fermentation Industries".

THE SECTIONS

It was agreed that each of the four organisations which had joined together in 1903 to form the four Sections of the Institute, should continue to hold and administer any property and funds in its possession at the date of the amalgamation, and, with the Council's permission, the Sections were entitled to acquire new property and to appeal for funds for purposes in connection with their work. A further measure of decentralisation of authority allowed each Section to draw up rules for its own management, with the over-riding proviso that such rules and any subsequent amendments should be approved by the Council.

The management of each Section was entrusted to a Committee elected by the members of the individual Section.

To provide the necessary funds for the work of the Sections, it was agreed that the Council should make an annual grant to each. With this sum the Sections were expected to defray the expenses incidental to the conduct of their business; should, however, the grant prove insufficient for this purpose, the Council was authorised to make up any deficit.

The grants for 1904, the first year of the working of the new Institute, were based on the previous years' expenditure of each of the four Institutes now comprising the Sections. In each subsequent year the Sections were required to submit to the Council an account of their expenditure during the preceding twelve months, so that the amount of the grants could be determined. It was decided, however, that in computing the amount of the grants in any year, the Council should

ignore any income accruing to a Section from the property or funds in its possession at the time of amalgamation.

A Scottish Section Formed

Before the Institute's first year had expired arrangements had been made to add a fifth Section to the existing ones. This was the Section of the Institute in Scotland which was formed as a result of an application by sixty members resident north of the Border. The new Section began its operations on January 1st, 1905.

Communications to the Press

The Council was not unmindful of the value of calling the attention of the general public to the various aspects of the Institute's work. To this end, it was proposed in 1911—and the Sections agreed—that the authors of technical papers read before any Section should provide the Hon. Secretary of that Section with short abstracts of their papers. He, in turn, could at his discretion, if he considered them of interest to those outside the trade, send these abstracts to selected newspapers or technical journals.

From time to time irresponsible and incorrect statements about the brewing of malt beverages and kindred subjects appeared in the press, and it was felt that it was necessary to combat such sources of damage to the industry. A Press Statements Committee was, therefore, set up in 1909, to reply jointly to any such communications.

ANALYSIS

A Standing Committee on Analysis was instituted in 1918. Before that date, however, special Committees were appointed from time to time to investigate problems in analysis and other technical matters. For instance, in 1905, a Committee was appointed by the Council to consider "methods of determining the extract, moisture, diastatic power, colour and percentage of ready-formed sugars in malt". The object of this investigation was to provide a common analytical system to which, in cases of disagreement, both buyers and sellers could resort, and thus to obviate commercial disputes. The Committee's report was approved by the Council in 1906.

Another Committee in 1910 was asked "to consider the question of determining the extract and colouring power of so-called coloured malts and the colour value of caramels", with the result that the Council published an "Institute of Brewing Committee (Coloured Malts and Caramel) Methods, 1910". This was followed a few years later by the publication of "The Institute of Brewing Method for the Estimation of the Moisture-content of Barleys".

THE EARLY YEARS, 1904-1918

BARLEY THRESHING

The need for greater care in the threshing of barley was another problem which engaged the attention of the Institute about this time. In 1905 the Institute had been represented by Mr. Montagu W. Baird, a member of the Council, at a meeting in Edinburgh of those interested in the question. The Highland and Agricultural Society and the Board of Agriculture were both concerned with the problem. A leaflet was prepared for circulation north of the Border and subsequently, at the instance of the Institute, for use in the barley-growing districts of England. The leaflet was re-issued in 1910, when some 87,000 copies were distributed by the Institute, through maltsters, among farmers and owners of travelling threshers.

THE PHYSIOLOGICAL EFFECTS OF BEER

The question of supporting schemes to combat ill-informed propaganda on this subject was considered by the Council in 1909, when the industry agreed to participate in a plan to establish an International Institute for Dietetic Physiological Research to carry out investigations on the physiological effects of beer and other alcoholic beverages on the human system. The first moves in this scheme had come from Germany, and the headquarters of the International Institute were located in Berlin in the premises of the Versuchs-und Lehranstalt für Brauerei. British participation was in the joint names of the Brewers' Society and The Institute of Brewing. The nomination of United Kingdom representatives to the governing body of the International Institute was left in the hands of The Institute of Brewing and the following were nominated :—

Mr. Edwyn F. Barclay (the then President of the Institute), Mr. Julian L. Baker (the Hon. Secretary), Sir Richard C. Garton, Dr. E. R. Moritz, Mr. A. Gordon Salamon and Dr. R. T. Thorne.

On the outbreak of war with Germany in 1914, British participation in this research inevitably ceased, but in the preceding years a number of investigations of great interest to the medical profession, and particularly to physiologists had been carried out.

ORIGINAL GRAVITY TABLES

In 1909, with the concurrence of the Lords Commissioners of H.M. Treasury, consideration was given by the Board of Inland Revenue to the question of revising the table contained in the First Schedule to the Inland Revenue Act of 1880, since it had been found that the table gave

inaccurate results when used in determining the original specific gravity of worts of beer.

After communicating with the Council of the Institute, the Commissioner of Customs and Excise instructed Sir Edward Thorpe, C.B., F.R.S., the then Principal of the Government Laboratory, to co-operate with Dr. Horace T. Brown, F.R.S. (who, with the approval of the Brewers' Society, had been nominated by the Institute to act on behalf of the brewing industry), to conduct a series of investigations with a view to the construction of a new table of original gravities.

The joint enquiry began in July, 1909, with experimental brewings in the Government Laboratory and, after a table to serve as a control had been constructed, passed on to operations in various breweries. These breweries were chosen by Dr. Brown as representative of the various systems of brewing practice in the United Kingdom, regard being paid to the variations in the materials used as well as to the character of the beer produced.

The following year a Committee was appointed by the Council to receive and consider reports on this joint investigation, this Committee in turn reporting to the Council in the autumn of 1911, with the recommendation that the two memoranda and table submitted to it for consideration by Sir Edward Thorpe and Dr. Brown should be approved. This was done and there was joint consultation between the Institute, the Brewers' Society and the Treasury. Agreement with the Customs and Excise Department was reached in 1912, and the approved terms were embodied in Section 7 of the Finance Act of 1914. In the same year, a record of the investigations was published in the Institute's Journal under the title, "Reports on the Determination of the Original Gravity of Beers by the Distillation Process".

EXAMINATIONS

In 1912 the question was raised again of the value of some system of technological examinations as a means of stimulating the acquisition by the younger generation of brewers of a knowledge and experience which would make them better equipped for posts in their industry. At a meeting in April of that year, Mr. Julian L. Baker submitted to the Council a scheme for the development of the work of the Institute. In effect this was a resuscitation of the proposals for the establishment of an Examining Board which had been discussed and approved by the London and Yorkshire Institutes at the end of the previous century.

The Council felt that these suggestions merited careful consideration and a special Committee was appointed to examine and report on them. It duly endorsed the proposal for a Board of Examiners,

stating that a technological examination of a high standard was eminently desirable, that such an examination should be open only to members of the Institute, and that any scheme to give effect to the proposals should first be submitted to the general body of members of the Institute for their approval.

These recommendations were accepted by the Council and the Committee was re-appointed to draw up a working scheme in detail and to suggest means of carrying it into operation. As a preliminary measure, the views of each Section of the Institute were canvassed, with the result that the broad outlines of the scheme were unanimously approved by the members as a whole.

Discussions with the Operative Brewers' Guild

In the meantime, discussions were opened in 1913 with the Operative Brewers' Guild* to ensure that that organisation's aims and objects would not conflict with the objects for which the Institute had been founded.

The Guild had come into being in 1906 and six years later its membership had risen to over 300. Its main objects were generally to promote whatever might tend to elevate the status of its members and advance the interests of the profession, to give opportunities for intercourse between its members, to act as a clearing-house for information and to encourage and assist in maintaining the highest degree of efficiency among those engaged in the craft. The Guild intended to apply for a Charter of Incorporation and to create a Benevolent Fund to relieve cases of urgent necessity among its members.

Discussions between the Institute and the Guild were informal at first, but later in the year the Chairman of the Guild (Mr. Walter Finch) and a number of its members were invited to attend a special meeting of the Council of the Institute. It was ascertained at this meeting that the Guild was itself interested in an examination scheme; it felt, however, that any examination should be made compulsory.

The Scheme is Approved

The Special Committee appointed by the Council of the Institute to work out a detailed scheme for submission to the Sections had strengthened its ranks by the inclusion of additional members and an invitation to the Sections to nominate representatives to serve on it. It submitted a Memorandum to the Council in May, 1913, and this, with some amendments, was circulated to the Sections to ascertain

* The title of the Guild was changed in 1929 by licence of the Board of Trade to the Incorporated Brewers' Guild.

whether its more detailed proposals would meet with the approval of the general body of members.

By the beginning of the winter the results of general meetings convened by the Sections to discuss the Memorandum were made known and were of so encouraging a nature that the Council felt itself justified in issuing and taking a vote on a slightly amended document among the members of the Institute.

Although there was an almost unanimous majority in favour of the scheme, somewhat less than half the total membership of 900 returned their voting papers. A second referendum was, therefore, made and conducted by the Sections. The results of the voting in this second ballot showed that 76·5 per cent of the members asked to vote registered an opinion and that 93·5 per cent of those who replied were in favour of the scheme. The replies showed also that most of those members who were not practical brewers refrained from voting.

In 1915 new Rules and Bye-Laws to give effect to the scheme were approved.

As a result, an examination scheme to come into force on the "date appointed" was drafted by the Examinations Committee and approved by the Council in October of the same year. The "date appointed" was first fixed for January 1st, 1916, but the continuance of the war led to its postponement *sine die*. The scheme ultimately came into force on December 31st, 1920.

THE JOURNAL

During the period under review, the Journal of the Institute, under the editorship of Mr. A. R. Ling, won recognition as the leading technical journal of the fermentation industries throughout the world. Some 260 original papers appeared between its covers during the period.

In format and policy, the Journal underwent scarcely any change since its early days. The one innovation was that, when the amalgamation took place and The Institute of Brewing came into being, it was decided to accept advertisements for its pages. Before this date the production of the Journal of the Federated Institutes of Brewing, as it was then known, resulted in an annual deficit of about £150 which had to be met by special appeals to the members for funds. This change of policy decreased the cost of production.

The first collective index of the Journal, covering the years 1887 to 1910, was compiled by Mr. W. H. Bird and published in 1911.

CONGRESSES

The Institute was represented from time to time at various congresses held in European cities and in the United States of America. At one

of these, an International Congress for the repression of adulteration held in Paris in 1909, the Council of the Institute opposed attempts to lay down a definition of beer. It agreed that no exact and generally applicable definition could be framed owing to the wide variation in manufacturing processes in different countries. The Congress, however, adopted the following definition :

“La bière est la boisson obtenue par la fermentation alcoolique d'un mout fabriqué avec du houblon, du malt d'orge et additionné de levure.”

The first International Congress of Brewing which met in Brussels the following year was more cautious. An attempt to frame a definition which would be acceptable internationally was unsuccessful.

DR. HORACE T. BROWN, F.R.S.

At a meeting of the London Section of the Institute in 1916, Dr. Horace T. Brown was presented with his portrait in crayons by Sargent* to commemorate the fiftieth anniversary of his first connection with the brewing industry. After the presentation, Dr. Brown read a paper entitled “Reminiscences of Fifty Years' Experience of the Application of Scientific Method to Brewing Practice”.

Much of Dr. Brown's working life was spent in Burton-on-Trent, in which town he had been born in 1848. In 1866 he joined the firm of Worthington & Co. Ltd., as junior brewer, becoming manager in 1873. In spite of his complex duties as a brewer, he continued to enlarge his scientific knowledge and interests, being in turn naturalist, chemist, geologist and biologist.

Brown left Burton in 1894 for London and for the next thirty years his interests mainly centred in research. His name will always be linked with the Guinness Research Laboratory in Dublin which he helped to establish and which he directed for the first five years of its existence. The names Brown and Morris, the latter standing for George Harris Morris, Brown's private assistant since 1883, also became household words in brewing circles.

Horace Brown received many honours and distinctions, notably the Fellowship of the Royal Society in 1889, the Longstaff medal of the Chemical Society in 1894, the Royal medal of the Royal Society in 1903, and the Copley Medal of the Royal Society (the highest honour it can confer on a scientist) in 1920. He was the author of many papers of practical and scientific interest which were published in the Institute's Journal and elsewhere.

* On Dr. Brown's death in 1925 the portrait reverted to the Institute. It was lost, however, when Brewers' Hall was destroyed by enemy action in 1940.

Dr. Brown, who was the half-brother of Professor Adrian Brown, died in 1925 at the age of seventy-seven.

PROBLEMS OF THE WAR

Yeast

The outbreak of war with Germany in 1914 brought its own problems. In 1917, on behalf of the Royal Commission on Wheat Supplies, steps were taken by the Institute to ascertain the quantity of brewer's yeast available in the country for blending, if need be, with distiller's yeast in bread-making. Tests by Mr. Julian L. Baker showed that a mixture of the two yeasts could be used without materially lengthening the doughing process. Any shortage of distiller's yeast could, therefore, have been overcome by the use of brewer's yeast, of which there was available at the time about 48 tons in the country, one half being unpressed.

State Purchase or Control

At a later date the Government considered the possibility, as an urgent war measure, of assuming control of the manufacture and supply of intoxicating liquors for the duration of hostilities and the period of demobilisation. Suggestions were made that any such measure would involve the purchase of the industry by the State after the war.

A Protection Committee was, therefore, appointed by the Council in November, 1916, with a view to safeguarding the interests of the technical and consulting staffs of breweries and closely dependent industries. Consultations were held with the Brewers' Society and the Operative Brewers' Guild, and it was agreed that the protection of the interests of operative brewers should be left in the hands of the Institute.

In June of 1917, Committees were set up by the Home Office and the Scottish and Irish Offices to consider the financial aspects of control and purchase of the liquor trade by the State.

Meanwhile, the recommendations of the Institute's Protection Committee had been embodied in a Report which was approved by the Council and by a Special Committee of the Guild. The main subjects dealt with in this Report were the position of persons in the permanent employment of the industry whose services would be retained in the event of State control, and of persons in the permanent employment of the industry who might be considered redundant; the position of the consulting staffs; and the question of pensions and superannuation allowances.

The claims of the industry's technical staffs, with special reference to operative brewers, were put forward in evidence given before the Home

Office Committee for England and Wales by Mr. Sydney O. Nevile and Dr. E. R. Moritz, the latter speaking on behalf of the consultants. Evidence was also given before the Committees for Scotland and Ireland.

The Reports of these three Liquor Trade Finance Committees were published in May, 1918. The proposals therein for compensation of redundant staffs were considered by the Institute's Protection Committee to be totally inadequate and protests were duly made to the Principal Secretary of State for Home Affairs, and the Secretary for Scotland. In Ireland, the original evidence had been given by the Operative Brewers' and Maltsters' Association (Ireland), and further action was, therefore, left to that body.

Fuel Economy

The demands of the war also caused the Government to set up in 1918 a number of departmental and advisory Committees to "consider and report and where necessary to carry into effect such arrangements among breweries throughout Great Britain as will lead to economies in coal, transport, manpower, etc." The Protection Committee of the Institute took steps to meet this situation, but, as a result of negotiations between the Brewers' Society and the Government, the latter decided to abandon its schemes for the centralisation of brewing on the understanding that the industry itself would take steps to achieve substantial economies in its consumption of fuel. Towards the end of 1918, therefore, the Council appointed an Expert Committee, at the request of the Brewers' Society, to formulate practical recommendations and to assist individual firms where possible to effect the desired economy.

All brewers were asked to supply this Committee with data and suggestions towards the achievement of its aims, and a special general meeting of the Institute was convened on October 7th, 1918, to discuss the subject of fuel economy in breweries. Many suggestions were received and collated, and in due course a memorandum was issued to all breweries and to members of the Institute and the Operative Brewers' Guild.

The Committee, in the course of its work, was able to give expert advice in a number of instances, as well as assistance to firms in obtaining priority in the installation of new plant. Some of its members with expert technical knowledge were nominated by it and appointed by the Controller of Coal Mines to advise the local technical representatives of the Controller in each of the twenty-one areas into which the United Kingdom had been divided.

The Government's fuel economy campaign was suspended in April,

1919, when the Controller of Coal Mines, in thanking both the Committee and the brewing industry for their patriotic efforts, said that the results already obtained had been highly satisfactory.

Requisitioned Barleys

To meet the position resulting from the Government's decision to base their payment for requisitioned barleys partly on a sliding scale dependent on the moisture-content of such barleys, an *ad hoc* Committee of the Institute, at the suggestion of the Maltsters' Association of Great Britain, considered in April, 1918, the possibility of standardising methods for the estimation of moisture-content so that there should be no appreciable variations through differences in method of analyses used by different analysts. As a result, the Institute published "The Institute of Brewing Method for the Estimation of the Moisture-content of Barleys".

GENERAL PURPOSES COMMITTEE

In 1918 the Council appointed a General Purposes Committee to advise it on matters affecting the interests of the Institute and its members. This Committee consisted of the President, Past Presidents, such Vice-Presidents as were members of the Council, and two other members, with power to co-opt.

FEDERATED SCIENTIFIC SOCIETIES

In the same year the Institute was added to the list of Constituent societies of the Conjoint Board of Scientific Societies. Mr. A. R. Ling was nominated to represent the Institute on the Board. The Conjoint Board, on which the twenty-seven leading scientific societies of the country were represented, was constituted to promote the co-operation of those interested in pure or applied science; to supply a means by which the scientific opinion of the country might find effective expression; to take any necessary action to promote the application of science to industry or to the service of the nation; and to discuss scientific questions on which international co-operation seemed desirable. The Board was dissolved in 1923.

In 1918, too, at a meeting sponsored by the Chemical Society, it was agreed to make arrangements to establish a federation of all the bodies specially interested in the development and application of chemical science. For this purpose a provisional Council was set up, the following societies being represented on it:—the Chemical Society, the Association of British Chemical Manufacturers, the Society of Public Analysts and other Analytical Chemists, the Society of Dyers

and Colourists, the Society of Chemical Industry, the Faraday Society, the Biochemical Society, the Society of Glass Technology and The Institute of Brewing. Mr. A. Chaston Chapman was the Institute's representative. A Federal Council of Pure and Applied Chemistry was constituted in November, 1918, its chief purposes being to consider and to take appropriate action in matters affecting the common interests of its constituent bodies.

The functions of this body were taken over in 1935 by the British National Committee for Chemistry.

RESEARCH

A document prepared by the Acting Secretary and entitled "The Privy Council Research Scheme and the Reconstruction of The Institute of Brewing" was considered by the Council in 1918. The Council expressed the view that an extension of the Institute's activities was eminently desirable, and considered ways and means of raising the requisite funds. The alternatives were these:—money might be subscribed directly by the breweries, or the Brewers' Society might be asked to guarantee an annual grant to the Institute. The method chosen was that of individual approach to firms for financial support.

SECRETARIAT

The first Secretary of the Institute, Dr. E. B. Pymar, resigned in 1908, to devote himself to his work as Director of Legal Studies at King's College, Cambridge. He was then elected an honorary member of the Institute.

Dr. Pymar had been Secretary of the old Laboratory Club and subsequently of the Institute of Brewing (London) since 1890. He continued the same duties after the new Institute came into being. He died in 1924.

The position of Secretary was next held by Mr. Julian L. Baker, who served the Institute in an honorary capacity until 1917 when he resigned. Mr. W. H. Bird, who had held the position of Assistant Secretary to the Institute of Chemistry and had been appointed Assistant Secretary of The Institute of Brewing in 1908, became Acting Secretary on Mr. Baker's resignation.

Provision was made in 1915 for the appointment of an Honorary Foreign Secretary. Between that year and 1918 three members held that office:—Professor Adrian J. Brown, F.R.S. (1915-17), Mr. A. Gordon Salamon (1917-18) and Dr. L. T. Thorne (1918).

PART III

THE EVOLUTION OF THE RESEARCH FUND SCHEME

1919-1934

The third period in the history of The Institute of Brewing was generally marked by its growing activities in a number of directions, but more particularly was it noteworthy by reason of the evolution of the Research Fund Scheme.

THE SECTIONS

During the period under review the Council received many constructive suggestions for the furtherance of its work from the Committees appointed by the various Sections. The headquarters of the Institute was also enabled to keep more closely in touch with local opinion by periodical meetings of the Chairmen and Honorary Secretaries of the Sections. These meetings, at which various aspects of the Institute's work were discussed, formed a useful clearing house for the exchange of news.

Hitherto, meetings of the Institute had been confined to London, and the recognised centres of the individual Sections. The proposal was, however, sometimes made, that it would be appropriate to hold meetings occasionally in other towns more conveniently situated for some members. In October, 1930, accordingly, a very successful meeting, attended by some sixty members and friends, was held in Southampton.

A New Section

In 1921, a new Section, with headquarters at Burton-on-Trent, was formed. The inaugural meeting and dinner were held in that town, under the chairmanship of Dr. A. L. Stern.

Authors of Papers

An interesting analysis of readers of papers before the Sections was made by the Secretary in 1927. It covered the seven years immediately prior to the war of 1914-18 and the seven years immediately subsequent to the cessation of hostilities. From this analysis it was apparent that over half the authors preparing papers were chemists and a further 27 per cent were brewers.

Deputies at Council Meetings

In 1933 the Council decided that, should the official representative of any Section be unable to attend a Council meeting, the Chairman of his Section should have authority to nominate a deputy to attend the meeting in his stead. Deputies were not given power, however, to vote at Council meetings.

MEMBERSHIP

Additions to the Membership

The list of persons eligible for ordinary membership was increased in 1919, by the addition of barley growers.

In that year, too, in addition to the four classes of members already existing—ordinary, diploma, associate and student—a fifth class was created. This was Research Fund membership and the Rule creating this class read:—

“Research Fund members shall be companies, firms and individuals carrying on business as Brewers of Beer or Vinegar, Maltsters, Distillers, Manufacturers of Cider and Wine, Coopers, Barley and Hop Growers, Barley and Hop Merchants and Hop Factors.”

In 1925, however, the expression “Corporate member” was substituted for that of “Research Fund member”.

THE UNIVERSITY OF BIRMINGHAM

When Professor Adrian J. Brown, F.R.S., the first occupant of the Chair of Malting and Brewing in the University of Birmingham, died in 1919, he was succeeded in that position by Mr. Arthur R. Ling. Mr. Ling at that time was the Editor of the *Journal of The Institute of Brewing*. In February, 1921, the Adrian Brown Memorial Lecture was delivered in the University by Professor H. E. Armstrong, F.R.S., under the auspices of the Institute.

In the same year, in answer to an invitation from the University, the President of the Institute was nominated by the Council as an *ex officio* member of the Board of Management of the British School of Malting and Brewing. In 1927 the Board amended its constitution to enable the President to appoint a deputy to attend any meeting of the Board at which he himself was unable to be present.

In 1930 the University celebrated two events, the jubilee of the foundation of Mason Science College, and the thirtieth anniversary of the granting of the University Charter. Mr. Percy Gates, the President of The Institute of Brewing at that time, and the Secretary, represented the Institute at the function held in connection with the celebrations.

EMPLOYMENT PROBLEMS

A new and useful activity was initiated in 1919, by the setting up of an employment bureau. All brewery firms were invited to notify the offices of the Institute when vacancies occurred, so that particulars could be sent, under a box number, to those operative brewers and others whose names were on the books of the bureau. It was laid down, however, that the bureau's facilities should be available only to those who could certify that they had been authorised by their employers to seek other posts.

The Appointments Department of the Ministry of Labour invited the Council of the Institute in 1919 to ask its members to assist in the resettlement of discharged officers, and to publish a specified appeal to this end in the Journal of the Institute. This appeal contained the suggestion that war service should be regarded as a substitute for the usual pupilage premium. Although the Council was in sympathy with the Ministry's efforts, it felt itself compelled to point out that there were difficulties peculiar to the brewing industry which made it inadvisable in the interests of the men themselves to recommend it as a possible field of employment. Opportunities for the employment of operative brewers were strictly limited and as time went on these opportunities, owing to amalgamations and other causes, would become even more restricted. Indeed, the Institute doubted whether there would be sufficient opportunities for the absorption of all those pre-war employees in the industry who might seek re-employment on returning from war service. In these circumstances the Institute felt itself unable to accede to the Ministry's request.

After the 1914-18 war, too, there were indications that, while the salaries of other brewery employees had been substantially increased, the claims of the operative brewer had in many cases been overlooked.

It is not, of course, the function of The Institute of Brewing to identify itself with claims for increased remuneration by any section of the salaried staffs. Nevertheless, on this occasion the Institute felt that a letter might be addressed to the Brewers' Society pointing out that considerable hardship had arisen in not a few cases which had come to the knowledge of individual members of the Council. Indeed, it felt that it might have laid itself open to criticism had it suppressed the information in its possession that there was some ground for dissatisfaction and that an increasing number of brewers and chemists were seeking a change of position as a result of salary difficulties. A letter was accordingly sent in 1919 to the Brewers' Society, which expressed the hope that if inadequate remuneration was paid to

operative brewers by any firms, the grievance, on being brought to their notice, would receive full consideration.

A further instance of the Institute's concern for the position of operative brewers occurred in 1923. Dr. E. R. Moritz, on the occasion of his presidential address at the annual dinner of the Institute in that year, expressed the hope that steps would be taken to help those brewers who, through amalgamations or other causes beyond their own control, were deprived of their means of livelihood. This sentiment did not go unheeded and, at its meeting on May 11th, 1923, the Council passed a resolution to the effect that a fund should be created for the temporary alleviation of brewers threatened with distress in such circumstances. The matter was referred to the General Purposes Committee which carefully considered it in collaboration with Mr. E. M. Strouts, the then President of the Operative Brewers' Guild, and other prominent members of the Guild. Eventually the Committee recommended to the Council that any appeal for funds which the Guild might issue to brewery owners should be supported by the Institute. This recommendation was adopted by the Guild which expressed its appreciation of the spirit of goodwill behind the offer.

As a result, the Rules of the Operative Brewers' Benevolent Society were altered to admit the nomination of two representatives of The Institute of Brewing on the Committee of Management, and an appeal for funds, stating this fact, was issued at the close of the year. This appeal bore the following special endorsement over the signatures of Dr. E. R. Moritz, as President of the Institute, and Mr. Frank Nicholson, as Chairman of the Brewers' Society :—

“Every great industry depends upon the services which it can command and of all the services needed by the brewing trade, those rendered by the operative brewers are the most indispensable. Therefore, when through causes over which they may have absolutely no control, these officials are thrown out of employment, an appeal to brewing firms and companies for help will assuredly meet with a prompt and generous response. Distress among operative brewers may come from many causes, but the tendency for brewery companies to amalgamate and close down breweries which become redundant acutely adds to the difficulties of the position. An operative brewer may one day be carefree and whole-heartedly absorbed in his brewing duties; the next day he may learn that his services are soon to be dispensed with for the brewery is to be shut down. And with so many breweries closed or closing, it is harder than ever for an operative brewer so dispossessed to find another brewing appointment.

“The training of the operative brewer is long, expensive and highly specialised, and if a dispossessed brewer finds it impossible to get another position, it must take time to fit him for some other occupation, and during this time he may want temporary assistance.

“The Benevolent Society of the Operative Brewers’ Guild has for many years had a small fund to relieve distress amongst operative brewers arising from any cause. This fund is mainly provided by operative brewers but several brewing firms have contributed to it. Owing to more assistance being wanted through the closing down of breweries (and the probable continuance of this course of affairs for some time), they feel that they must ask proprietary brewers for a wider-spread assistance. The appeal which follows from the Chairman of the Operative Brewers’ Guild sets out the particulars.

“On behalf of the Brewers’ Society and of The Institute of Brewing, we cordially support and endorse the appeal and we are confident that it will meet with a generous response. We consider that the sum asked for is a very reasonable one, and we should be proud to hear that it had been quickly over-subscribed.”

In 1925 the Brewers’ Society presented the sum of £8,000 to the Benevolent Society of the Guild.

In that year also the Institute gladly gave its support to the suggestions made by the Operative Brewers’ Guild, that employers should give preference to operative brewers in search of employment when such positions were available as transport, cellar and bottling store managers, superintendents of public house cellars and posts calling for clerical and administrative abilities. The suggestion was brought before the Brewers’ Society in letters both from the Guild and the Institute, and was considered by the Society at a meeting in September, 1925. A resolution was then passed commending the suggestion to the sympathetic consideration of members of the Society.

VICE-CHAIRMAN OF THE COUNCIL

In 1923 the question of making provision in the Institute’s Bye-laws for the appointment of a deputy President was considered. At a meeting of the Council held in November of that year, the description of “Vice-Chairman of the Council” was formally adopted and Mr. R. J. B. Storey was elected to that office.

EXAMINATIONS

Evolution of the Examinations Scheme

The date appointed for the introduction of the prescribed examination for candidates for admission to diploma and associate membership

THE EVOLUTION OF THE RESEARCH FUND SCHEME, 1919-1934

was finally fixed for December 31st, 1920. A further extension of one year, however, was granted in certain cases which came under the provisions of Rule 13. Broadly speaking, this relaxation was applied to members of the Institute who were qualified for diploma or associate membership but who had been prevented by illness, absence from the United Kingdom or other reasonable cause, from making application to be elected.

The case of men who had served with His Majesty's Forces during the war came up for consideration in 1919. It was then decided that the question of counting war service as "approved experience" of practical brewing should be considered on its merits in the case of each candidate for election to diploma or associate membership. Each candidate of this kind was required to prove that he had entered the profession of brewing before the war, and was, at the date he joined the Forces, either *in statu pupillari* or actually employed as an operative brewer in a brewery.

The prescribed examination, defined in the original examination scheme of 1915 and adopted by the Council in that year, was divided into three parts.

Part I was an examination of a preliminary nature, and required candidates to answer elementary questions on chemistry, physics, botany, bacteriology and engineering. Part II was an examination in elementary brewing, covering such subjects as an applicant for a junior position in a brewery would be expected to know. Part III was an examination in brewing of an advanced character and covered those subjects in which an experienced brewer would be expected to have a good knowledge.

Candidates for associate membership of the Institute were required to satisfy the examiners in Parts I and II, while candidates for diploma membership had to pass Parts I and III. It was, however, decided that holders of certain qualifications could claim exemption from Part I.

The 1915 scheme lay dormant until the end of 1921 when it was revised, mainly at the instigation of Dr. Horace T. Brown. The first examination was held in 1922. The chief alterations made to the existing scheme were the introduction of a preliminary examination in subjects of general knowledge* and the combination of the subjects

* All candidates for the Institute's prescribed examination were required to pass an approved preliminary examination. A list of those examinations which the Council was prepared to accept as "approved preliminary examinations" provided the candidate had passed in certain specified subjects, was included in the scheme. The Examinations Committee was, in addition, empowered to accept other evidence of a candidate's good general education. This concession was withdrawn in 1937.

in the original Parts I and II to form a new Part I. Part I (the examination for associate membership) thus became an examination in chemistry (inorganic and organic), physics, botany, vegetable physiology and bacteriology, and the principles underlying the practice of malting and brewing.

Before a candidate was eligible to sit for Part I of the examination, he was required to produce evidence of having completed two years' practical experience of brewing in a brewery. This proviso was subsequently cancelled.

In the revision of the scheme, the new Part II (the examination for diploma membership) remained practically the same as the original Part III. Its syllabus covered questions on malting; brewing and brewery and public-house cellar management; bottling; engineering (including fuel and power); scientific control, water, materials and by-products; cooperage; and general knowledge (including mechanical and horse transport).

In determining the subjects for the new Part I, the Committee had in mind the desirability of providing some means of exemption from a part of the examination for those candidates who had taken a recognised course of training. The syllabus for Part I was, indeed, intended to be the equivalent of that obtaining in the examinations for the diplomas of malting and brewing granted by the University of Birmingham and the Heriot-Watt College, Edinburgh. Holders of either of these qualifications were, therefore, exempted from Part I. It was decided also to grant exemption from Part I of the Institute's examination to those candidates who had been awarded the certificate in malting and brewing issued by these two educational establishments, provided that, in addition, the candidates had completed other specified courses of training.

These remained the only exemptions until 1929 when it was agreed that the Examinations Committee could exempt from Part I (either wholly or in part) such candidates as had passed the final examination for a degree in science of any University approved by the Committee, and such candidates of approved experience as had passed a satisfactory examination in science.

It was, however, decided in 1930, after consultation with representatives of the Brewing School at Birmingham University, the Heriot-Watt College and the Sir John Cass Technical College, to sub-divide Part I of the examination into two parts and to allow candidates to take each section on a separate occasion if they so desired. It was felt that this step would tend to enable all candidates to obtain a more thorough knowledge of the subjects covered. As a result of this decision,

Part I (a) covered chemistry (inorganic and organic) and physics, and Part I (b) comprised plant biology and biochemistry as applied to malting and brewing. This alternative came into force in 1932.

In 1933 the Council decided to follow the precedent set by other examining institutions and, as a matter of routine, to acquaint employers with the success of any candidates employed by them.

In the same year it was decided that honours in Part II should be granted to candidates obtaining 70 per cent or more of the total marks allotted for the whole examination, with a minimum of 50 per cent of marks in any one subject.

Ex-Service Men's Exemption

The Council, on the recommendation of the Examinations Committee, accepted a suggestion from the Committee of the Scottish Section to the effect that exemption from Part I of the examination should be granted to ex-service men whose brewing experience dated back further than the "date appointed" (December 31st, 1920) without reference to the length of their experience. Such employees would remain ordinary members of the Institute until they had satisfied the examiners in Part II, when they would be eligible for diploma membership. The new rule, which came into force in 1931, made it incumbent on ex-service employees to make application for exemption within a period of one year from the date of the alteration to the Rules.

Some thirty members took advantage of this concession.

Students' Training

The question of guiding would-be entrants to the brewing industry in their courses of training, to ensure that they were best fitted for the positions which they sought to fill, continued to exercise the Institute from time to time. In 1927, for instance, the suggestion was made by Sir W. Waters Butler that there should be set up a joint Committee of the Board of Management of the British School of Malting and Brewing—and possibly other educational bodies—and The Institute of Brewing. The purpose of the Committee would be to consider and circulate schemes for students wishing to take the examinations of either body.

This suggestion was endorsed by the Examinations Committee of the Institute and in due course approved by the Council, although it was agreed that the only step that could be taken in the interests of the industry and the students themselves, was for the various teaching institutions to urge the students to take the examinations of the Institute in the course of their training.

In the following year, the Council issued a publication entitled "Advice to Students". This urged those hoping to enter the industry "(a) to attain a standard of general education at least equal to that of matriculation; (b) to obtain the certificate granted by the University of Birmingham, the Heriot-Watt College, Edinburgh, or the Sir John Cass Technical Institute, London, or, better still, (c) the diploma in malting and brewing granted by either of the first two bodies; and (d) to enter for the prescribed examinations of The Institute of Brewing when they had fulfilled the necessary conditions". An important consideration was that neither the diplomas nor the certificates mentioned above could be obtained until the student had had two years' practical training or pupilage in a brewery.

Another problem which came before the Council was that of the young brewer whose place of employment was situated so far from the centres of organised classes that it was physically impossible for him to attend them. This problem was discussed at a meeting of Chairmen and Secretaries of Sections in 1929 and the Committee of the Scottish Section recommended that a Central Advisory Committee should be appointed. This body would advise young brewers and brewing students applying to it on the best course to take in preparing for the Institute's examination, and arrange not only a series of correspondence classes, but courses of study which could be carried out at the nearest technical school to the applicant. To put these suggestions into operation, the Scottish Committee recommended the appointment by each Section of an adviser or advisers who would act as liaison officers and approach technical schools in their areas so that the necessary courses of instruction could be arranged.

The Examinations Committee, to which the matter was referred, was in full sympathy with most of the Scottish Committee's proposals, but it was dubious whether the limited number of young men entering the brewing industry warranted the creation of a Central Advisory Committee. The continuing amalgamations of firms was also a factor to be considered. Eventually, on the Examinations Committee's recommendation, the following paragraph was added to "Advice to Students":—

"The Examinations Committee realises, however, that a considerable number of young brewers may be employed so far from the recognised centres of training that they are deprived of the facilities which those centres provide, and to meet the claims of such students the Committee is empowered to make arrangements for their tuition at the Technical College or school most conveniently situated to

them, and where necessary, to suggest means for augmenting such tuition by correspondence classes* or otherwise."

Members were also informed of the location of some eighty technical colleges in the United Kingdom at which it was considered that there were facilities for the study of some, if not all of the subjects in Part I. The willingness of educational establishments to help was shown by the fact that one such body, the Merchant Venturers' Technical College, Bristol, included in its programme of evening classes for the session 1932-33 a special course for young brewers resident in the West of England.

ANALYSIS

Consideration was given in 1922 to the question of revising the Institute's 1906 and 1910 reports on malt analysis, and in due course a consolidated report was published entitled, "Standard Methods of Analysis. I. Pale Malts, II. Coloured Malts and Caramel". It was indicated in the report that these methods were to be considered sufficiently accurate only for the special commercial purposes for which they were intended. That is to say, they were laid down to enable both buyers and sellers to have recourse, in cases of dispute, to a common analytical procedure calculated to give a reliable estimate, as between buyer and seller, of the value of the sample.

The "Standard Method of Analysis" held good until the early 'thirties when the Council instructed the Standing Committee on Analysis to consider their revision, and also to go into the question of the extension of standard methods to the analysis of other materials. As a result, a revised edition of the 1922 "Standard Methods" was published in 1933 under the title "Standard Methods of Malt Analysis for Commercial Purposes". This report also contained an additional section dealing with "Methods for the analysis of flaked maize and flaked rice, and of grits and raw grain".

PRESERVATIVES AND COLOURING MATTERS IN FOOD

In 1923 the Ministry of Health appointed a Departmental Committee to enquire into the use of preservatives and colouring matters in food, and to report, firstly, whether the use of such materials was injurious and, if so, in what quantities did their use become injurious; and, secondly, whether the presence of such materials and the quantities present in food offered for sale should be declared. Since it had been laid down by the Sale of Food and Drugs Act of 1899 that, for the

* Arrangements were made, in 1933, by the University Correspondence College, Cambridge, for courses of instruction in the subjects of Part I (a) and Part I (b) of the Institute's examinations.

purpose of the Act, "food shall include every article used for food or drink by man other than drugs or water and any article which ordinarily enters into or is used in the composition or preparation of human food; and shall also include flavouring matters and condiments", this enquiry necessarily affected the brewing industry. A joint Committee of the Brewers' Society and The Institute of Brewing was, therefore, appointed to watch over the interests of the industry.

The Departmental Committee heard evidence during its meetings from 101 witnesses, representing a great variety of interests. Evidence on behalf of the brewing industry was given by Mr. H. W. Harman and, at a later stage, Mr. Sydney O. Nevile, the latter being accompanied by Dr. E. R. Moritz.

The report of the Committee was published in the autumn of 1924 and an Order under which beer might contain 70 parts per million of SO_2 was issued on August 4th, 1925. Contrary to expectation, the Departmental Committee did not attempt to define a method of analysis for preservatives in beer, but proposed to leave the matter in the hands of individual analysts throughout the country. This led the Institute to take up the matter with the Society of Public Analysts in the hope that a joint Committee of both bodies might be formed to try to ensure that individual public analysts did not adopt differing or possibly inaccurate methods. Owing, however, to the discouraging attitude of the Ministry of Health, these negotiations fell through.

Eventually, the question of a uniform method for the determination of sulphur dioxide, for use within the brewing industry, was referred by the Institute to its Standing Committee on Analysis, and the Committee's report was adopted by the Council in 1926.

Reports on the Progress of the Fermentation Industries

In 1916 the Society of Chemical Industry inaugurated its system of publication of annual reports on the scientific progress of various industries. These included the fermentation industries. In 1923, largely through the efforts of Mr. Julian L. Baker, arrangements were made for the "Annual Report on the Progress of the Fermentation Industries" to be published jointly by the Society and The Institute of Brewing, each body bearing its appropriate share of the cost of compilation and printing. The first Joint Report was issued as a supplement to the Journal of the Institute in the following year.

LIBRARIES

A small library containing mostly books on brewing and analogous subjects had been maintained by the London Section of the Institute

at Brewers' Hall. This was continued, but, during the period under review, a second and larger library was thrown open to members. This was the library comprising some 30,000 volumes maintained by the Chemical Society at Burlington House. By courtesy of the Council of that body, members of the Institute were granted the privilege in 1924 of consulting works in the library and borrowing books therefrom under the same terms as members of the Society. In return for these privileges, the Institute agreed to make an annual grant of £45 towards the upkeep of the library. This subscription was raised to £50 in 1931.

Another library containing works of interest to the industry was that of the Patent Office. In 1923 the Institute was asked to supply a list of brewing books and journals which it considered should find a place in this library. The list was prepared by Mr. John S. Ford, on behalf of the Research Fund Committee, and forwarded to the Patent Office.

MEMORIAL TO PASTEUR

Celebrations, attended by representatives of many nations and of many learned and technical societies, were held in Paris and Strasbourg for a week in May, 1923, to commemorate the centenary of the birth of Louis Pasteur, which fell on December 27th, 1922. During the celebrations, a monument to Pasteur was unveiled at Strasbourg, facing the University where, as a professor, he began his career. The cost of this monument was defrayed by international subscriptions, a total sum of £855 being subscribed by British interests. Of this sum the brewing industry was responsible for some £800, very largely through the instrumentality of Mr. H. E. Field, the then President of the Institute, who was a member of the British Committee appointed in connection with the centenary celebrations. The celebrations, which were attended by two representatives on behalf of the Institute, Messrs. H. Lloyd Hind and John M. Lones, were also marked by an exhibition demonstrating the advances in medicine, hygiene, industry and agriculture which had resulted from Pasteur's work.

BARLEY THRESHING

In August, 1924, the then President of the Institute, Mr. R. V. Reid, drew the attention of the Ministry of Agriculture to the excessive quantity of weeds in barley during the season and to the consequent anxiety among maltsters lest considerable damage might be done to malting barley if it were stacked with a large quantity of damp weeds. The Minister issued a warning to farmers of this danger to barley crops, and caused a copy of his letter to be published in the daily press.

THE HORACE BROWN MEDAL

In March, 1925, the Council considered a suggestion by Mr. Julian L. Baker for the establishment of a medal to perpetuate the memory of Dr. Horace Tabberer Brown, F.R.S., whose death had occurred on February 6th of that year. The suggestion received the unanimous approval of the Council and was referred to the General Purposes Committee, which, after considering various forms of memorial such as the foundation of a scholarship, concluded that a memorial medal awarded for eminent services to the fermentation industries would probably have been more in keeping with Dr. Brown's own wishes than any other form of memorial had it been possible to consult him. Moreover, such a memorial would be one which would receive the utmost prominence and which, by the conditions surrounding its award, could be assured of permanence. It was, therefore, decided :—

“That a gold medal to be named the HORACE BROWN MEDAL be awarded for eminent services on the scientific or technical side of the fermentation industries, at intervals of not less than three years, and then only if in the opinion of the Council an award is justified; and that in the case of an award of a medal the recipient should be invited to deliver a lecture on the occasion of the presentation of the medal.”

Others of the conditions laid down for the award covered the expenses incidental to it, which were to come out of the general funds of the Institute; the presentation, which was to be before members of the Institute assembled in General Meeting in the United Kingdom; and eligibility for the award which was to embrace either sex and all nationalities. The first award was to be made in 1926.

The Horace Brown Medal, which was designed by Mr. Frank Bowcher, A.R.A., is two and half inches in diameter. Reproduced on its obverse side is the crayon portrait by Sargent of Dr. Brown and, on its reverse side, are inscribed the words, “The Horace Brown Medal awarded by The Institute of Brewing”, followed by the date and name of the recipient. A garland of barley and hops surrounds this inscription.

A replica of the medal in bronze was presented to the Chemical Society in 1927 for inclusion in the collection of medals in the Society's library.

The first recipient of the medal was Professor H. E. Armstrong, the subject of whose memorial lecture in 1927 was appropriately “Horace Brown”. There were two further awards during this period of the Institute's history, to Dr. E. S. Beaven (1930) and to Mr. F. P. Whitbread (1934). The titles of their lectures were respectively, “The

Culture of Barley for Brewing” and “Some Aspects of the Licensing Laws of England and their Bearing on the Control of the Trade”.

As has already been stated in this History, the Sargent portrait of Dr. Brown reverted to the Institute on his death in accordance with his wish. The presentation was made by Miss Brown on the occasion of the third Horace Brown Memorial Lecture.

THE JOURNAL

The Journal of the Institute attained its twenty-fifth year of publication in 1919, an occasion which was marked by the decision to publish it at monthly intervals thereafter. In its first quarter of a century of life, 166 numbers were published. During the years 1919 to 1934, some 390 original papers found a place in its columns.

Early in 1920 Mr. Arthur R. Ling, who had been editor of the Journal throughout its existence, resigned on his appointment to the Adrian Brown Chair of Brewing in the University of Birmingham. A resolution recording the thanks of the Council to Professor Ling for his eminent services in the Editorial Chair was passed in June, 1920, and it may be of interest at this juncture to give a brief resumé of his career.

Born in 1861, Arthur Robert Ling studied chemistry under Professor H. E. Armstrong, F.R.S., at the Finsbury Technical College, subsequently joining the London Sugar Beet Association. In 1898 he became a partner with a well-known firm of consulting chemists, Messrs. Newlands Bros., and some five years later set up in practice on his own account.

From 1895 onwards Ling devoted a major part of his time to literary work. He re-wrote Sykes' "Handbook of Brewing" and was for a number of years technical adviser and contributor to the *Brewers' Journal*. He also lectured for many years on the fermentation industries at the Sir John Cass Technical College. After his twenty-five years of editorship of the Journal of The Institute of Brewing, Ling occupied the Adrian Brown Chair of Brewing for six years, retiring in 1931, when the Senate of the University conferred upon him the title of Emeritus Professor.

Ling's close relations with the Institute were not confined to editorship of its journal. He was chairman of its London Section in 1916, and of the Midland Counties Section from 1921 to 1922, and he was at one time Hon. Secretary and later chairman of the London Section of the Society of Chemical Industry. He also took an active part in the work of various other scientific bodies. He was elected an Honorary Member of the Institute in 1934, three years before his death.

On Professor Ling's resignation, he was succeeded as editor of the Journal by Mr. Julian L. Baker, F.C.G.I., F.R.I.C., who had been Hon. Secretary of the Institute from 1909 to 1917 and, before his appointment as Hon. Secretary of the Institute, had served in a similar capacity with the London Section of the Society of Chemical Industry. He had been editor of the *Analyst* from 1907 to 1920. Mr. Baker was at various times Vice-President of the Society of Chemical Industry and Chairman of its London Section and was elected a Vice-President of The Institute of Brewing in 1918. He was awarded the Horace Brown Medal of the Institute in 1948, retiring from the editorship of the Journal the following year.

The rapid growth in the Institute's activities and the continued increase in matter calling for publication led, in 1925, to alterations in the Journal's format. Some six years earlier it had been found necessary to make provision for a staff of abstractors to assist the editor to cope with the growing output of papers of interest to the fermentation industries appearing in contemporary journals both English and foreign.

These and other reasons for increased expenditure on the Journal led to further financial calls on the Institute's resources. After careful consideration and a very sincere acknowledgement of the invaluable services rendered by its existing printers, Harrison & Sons, Ltd., of London, who had admirably carried out the work for forty years, it was decided in 1934, as a measure of economy, to transfer the printing of the journal to W. Heffer & Sons Ltd., of Cambridge.

A second volume of the Collective Index of the Journal, covering the years 1911 to 1923, was compiled by Mr. W. H. Bird and issued in 1924.

THE FEDERAL COUNCIL OF PURE AND APPLIED CHEMISTRY

Conferences of chemical and allied societies were held during the years 1918-19, at which the Institute was represented by Professor Adrian J. Brown and Mr. A. R. Ling. These were called to consider the possibility of publishing in the English language *compendia* of the world's chemical literature, the suggestion being to give, as far as possible, a complete list of all chemical papers, an outline of their subject matter and their original references. Hitherto this had been done only in Germany and in the German language.

The report of the Committee appointed to consider the matter in detail was published early in 1919, and the development of the scheme set out therein was entrusted to the Federal Council of Pure and Applied Chemistry, which had been founded in 1918. During subsequent years the work of the Federal Council, until its functions

were taken over by the British National Committee for Chemistry, was directed very largely to international matters.

RESEARCH

Research Fund Members

The Special Committee appointed in 1918 to consider extending the Institute's activities recommended in its report the creation of a new class of members to be known as Research Fund Members whose subscriptions should be placed to the credit of a special Research Fund, to be administered by a Standing Research Committee, with a proviso that it would be open to the Committee, at the Council's request, to contribute at its discretion towards the general expenses of the Institute. It was not considered advisable that any part of these Research Fund subscriptions should be used to erect or purchase a centre for the carrying out of investigations, for it was felt that, for the time being at any rate, advantage should be taken of the valuable facilities for research offered by Universities, Agricultural Colleges, experimental research stations and other existing centres. The interests of the new members would be safeguarded by the fact that Research Fund members would be adequately represented on the Research Committee. It was also recommended that any member of the Institute should have the right to suggest problems for investigation to this body. If the Committee's opinion was that such a piece of research would be to the general good of the fermentation industries, rather than to the particular benefit of a firm or group of firms, it would have power to undertake it.

To test the feeling of the industry, a letter embodying these suggestions and describing the new class of membership was sent out, over the signature of Mr. Sydney O. Nevile, the then President of the Institute, to a number of firms with which members of the Council were connected. In this letter it was pointed out that it was hoped that companies and firms applying for membership would pay an annual subscription appropriate to their capital interests (the minimum subscription being ten guineas). They would have the privilege of nominating representatives to attend and vote at meetings.

The response to this letter was sufficiently encouraging to persuade the Council that the scheme would meet with general approval. It was, therefore, submitted to the Brewers' Society, which in due course commended it to its members. The Rules and Regulations of the Institute were accordingly amended, to give effect to the proposals outlined above, at two Special General Meetings held, respectively, on June 27th and July 28th, 1919.

The Research Fund Scheme

The first Research Fund Committee was appointed by the Council on January 28th, 1920, under the chairmanship of Mr. Sydney O. Neville, and it proceeded to formulate a "Research Fund Scheme".

In view of the diversity of the subjects to be considered, it was decided that advisory sub-committees should be appointed for different fields of work. Three sub-committees, dealing respectively with barley, hops and timber were set up in 1920, while hydrogen-ion concentration and yeast were similarly covered in 1923. The powers and duties of these sub-committees were defined in the Scheme which was adopted by the Council on March, 17th 1920.

After the Research Fund Scheme had been working for a period of five years, it was reviewed, and the recommendation was made that the subscriptions of Research Fund members should be placed on a "barrelage basis" (that is to say 10s. per 1,000 bulk barrels, with a maximum annual subscription of £250). It was also suggested that the term "Corporate member" should be substituted for that of "Research Fund member".

These proposals were unanimously agreed by the Research Fund members themselves and the necessary amendments to carry them into effect were made to the Rules, Regulations and Bye-laws of the Institute in the Spring of 1925.

About the same time the Chairman of the Research Fund Committee was elected an *ex-officio* member of the Board of Management of the British School of Malting and Brewing of the University of Birmingham.

In due course the question arose whether it would be advantageous to appoint a salaried officer to devote his time to the co-ordination of the researches carried out under the aegis of the Institute. It was decided that the immediate need would be met by the creation of a part-time appointment, and Mr. H. Lloyd Hind was appointed in 1927 as "Research Organiser". Reports from him to the Chairman of the Research Fund Committee on the progress of the work were published from time to time in the Journal of the Institute, until the appointment terminated in 1934 on the transference of the Research staff to the University of Birmingham.

The Raw Materials of Brewing

Investigations were begun in 1920 on the raw materials of brewing. In carrying out these investigations the Institute collaborated during the ensuing years with many farmers and with a number of agricultural colleges and experimental stations. The annual tours of hop gardens held each year from 1921 to 1938, when the principal growers in the

locality visited were invited to join the excursions, also did much to bring farmers into actual touch with the progress of the investigations.

The good effect that researches such as these must have on the country's agricultural economy was appreciated in many quarters. The Ministry of Agriculture summed the matter up in an account of the Institute's research work which it published in 1921 in its Journal:—

“Brewing and farming are interdependent. The brewer obtains his raw material from the farmer, and the farmer relies on the brewer for one of his principal markets; the condition of one industry cannot, therefore, fail to be a matter of concern to the other. Any progress, too, achieved in either industry as a result of research must be of benefit to the other. Research into questions relating to hops and malting barley is ground common to the two industries, and growers of these products cannot afford to be ignorant of the research work recently initiated by the brewing industry.”

Similar appreciation was expressed by Sir A. Daniel Hall, K.C.B., F.R.S., Scientific Adviser to the Ministry, in proposing the toast of The Institute of Brewing at its annual banquet that year; while, out of the many appreciative references in the Press to the work, the issue of the *Lancet* for June 26th, 1926, may be quoted:—

“It is to the credit of the brewing trade, at a time when many industries are accepting or seeking help from some outside source, that its own Institute has financed a research scheme by a system of voluntary contributions based on output from nearly 300 firms. . . . Over and above the actual staff of the Institute a large body of farmers, brewers, chemists, maltsters and hop-growers—all busy men—voluntarily give their services on numerous committees supervising the researches, while expert technical assistance is engaged where required. It should not be forgotten that it was on the basis of Pasteur's researches on the disease organisms of wine and beer that arose the superstructure of modern surgery and preventive medicine.”

BARLEY

In the general scheme formulated by the Research Fund Committee for the conduct of investigations on behalf of the brewing industry, provision was made, as has already been stated, for the appointment of Advisory Sub-committees for particular fields of research. At the outset, the Sub-committee appointed to cover research under the generic heading of “barley”, felt that this opened up such a vast field of enquiry that before recommending a specific programme of work, it

would be well to ascertain which particular line of research promised to be of most value to the brewing industry.

As a preliminary step, Mr. H. F. E. Hulton was asked to prepare a resumé of the published literature dealing with the evaluation of barley from the nitrogen standpoint, a subject on which there were many conflicting and indeed irreconcilable views. After studying this resumé of the subject, the Sub-committee decided in the first place to investigate how and in what manner the essential properties of the barley grain were related to the soil, season and manuring. The investigations, which were started in 1922, fell into two main divisions, *fieldwork* (with the Rothamsted Experimental Station as the directing centre) and *physical and analytical valuations* of the barleys and resulting malts. Interim reports on the progress of the work appeared in the Institute's Journal from time to time, and the final report which collected and co-ordinated the results obtained, was prepared by Sir E. John Russell, O.B.E., F.R.S., (Director of the Rothamsted Experimental Station) and Dr. L. R. Bishop, and published in 1933 under the title of "Report on the Ten Years of Experiments under The Institute of Brewing Research Scheme, 1922-31".

The work not only cleared up a number of important points about which there was much confusion of thought, but established data of great scientific value, and paved the way for further work of fundamental importance. Moreover, the field experiments proved of great value to the various County Agricultural Organisers, and through them to the farmers, and it was significant that, soon after the results of the manuring experiments began to become widely known, the yields of barley, which had been fairly steady for a number of years, started to rise. This increase continued until 1930 when the general slump in agriculture made increased yields of no account. No other crop showed increased yields at all comparable.

The publication of the report marked the completion of the agricultural side of the barley investigation* so far as the Institute was concerned.

Sir E. John Russell paid a generous tribute to what he called the "friendly and fruitful collaboration" of the Barley Advisory Sub-committee. "It is certainly true to say" he wrote to the Institute, "that our work at Rothamsted for the farmers has gained greatly

* Arising out of this work and in response to a request from many Scottish farmers for information on the nitrogen question and its bearing on quality and price, a useful pamphlet explaining the influence of various conditions of cultivation on the nitrogen content of barley and suggesting means by which barley of low nitrogen content might be grown was prepared by Dr. Bishop for Wm. Younger & Co. Ltd., Edinburgh, and issued by that firm to Scottish farmers in 1935.

through the full knowledge we have been able to gain of what the expert user of the barley crop required. . . . The association with Rothamsted has had the advantage of showing to the farmers and the agricultural expert that the demands of the maltsters and brewers for certain characteristics in their barley are not prejudices, but correspond to real qualities which the barley must possess if it is to give a good beer, and, as farmers themselves would be the first to grumble if the beer did not come up to expectation, they are certainly not entitled to grumble if their barley is not up to the standard required”.

Sir John went on to point out that, from the agricultural point of view, one great result of this barley research was that agricultural experts had a far greater knowledge of what the buyer required and how to supply it; they also realised that the requirements were based on definite principles and must therefore be respected.

Development of New Varieties of Barley

One of the activities of the Plant Breeding Institute of Cambridge is the breeding of new varieties of barley, the most promising of which are transferred to the National Institute of Agricultural Botany in the same town. There they are cultivated experimentally on a commercial scale side by side with standard varieties.

Co-operation with the N.I.A.B., more especially in regard to the Crop Improvement Branch, has been an important item in the Institute's scheme of research since 1922; and, in 1925, arrangements were made by the Barley Advisory Sub-committee to advise the Director of the Plant Breeding Institute of the malting qualities of the new varieties bred by him before transference to the N.I.A.B.

Similarly those varieties of barley which the N.I.A.B. considered to be likely to be of agricultural value were submitted to the Barley Valuation Committee* of The Institute of Brewing for physical and chemical valuation and malting trials. In this way up to the outbreak of war in 1939, a large amount of data was accumulated and passed to the N.I.A.B. for use in connection with its scheme for increasing the cultivation of the best kinds of barley and those most suited for malting or for different localities.

Another important phase of the work was that covered by the Cereal Synonym Committee, which is representative of all the chief interests, the N.I.A.B., the Royal Agricultural Society, the National Farmers' Union, the Cambridge Plant Breeding Institute, the Agricultural Seed Trade Association and the National Association of Corn and Agricultural Merchants. The aim of this Committee, as its title implies,

* Formed in 1922.

is to ensure, as far as possible, that one name and one name only is used for one and the same variety of barley.

After a survey of existing varieties, a number of different barleys suspected of being covered by synonyms was grown by the N.I.A.B. for the Committee which reported upon them in due course.

During 1923, collaboration was also established between The Institute of Brewing and the Société d'Encouragement de la Culture des Orges de Brasserie en France. This organisation (generally known as "Secobra") had been established in 1903, with the help of the leading French brewing firms, in order to study means of improving malting barleys in France.

Chemical and Biochemical Investigations

On the recommendation of the Barley Advisory Sub-committee, a biochemist, Dr. L. R. Bishop, was appointed in 1926 to conduct a systematic investigation into the application of biochemical methods to the valuation of barley. The work carried out by him during the years under review comprised researches into the nature and properties of the nitrogenous constituents of barley and malt, the determination of the relation between the total quantity of nitrogen and such properties as available extract, diastatic power of malt and so on, and investigations into the influence of the nitrogen compounds on such properties of wort and beer as yeast nutrition, brilliance, stability, etc.

Several reports on barley proteins, and on the prediction of extract were published in the Institute's Journal during the period under review, as well as a report, in 1934, on regularities in the carbohydrate composition of the barley grain.

Indian and Canadian Barleys

In 1928 the Institute collaborated with the United Breweries Ltd., of Bangalore, who had decided to purchase a farm for the experimental cultivation of barleys in India. In conjunction with that Company, the India Office and various agricultural authorities in India, the Institute's Barley Valuations Committee reported on the malting properties of samples emanating from various Indian provinces. The Committee's report was published in the Institute's Journal in 1931.

Similar assistance was given from 1933 onwards to the Government Cerealists of the Department of Agriculture of the Canadian Government.

Conferences on Malting Barley

A successful conference on malting barley was held at the Rothamsted Experimental Station in 1928, under the Chairmanship of Sir Archibald Weigall, K.C.M.G., the speakers including well-known maltsters and scientists.

A similar conference of malting barley growers and buyers and maltsters was held in 1934 at Rothamsted. The purpose of this latter conference was to enable maltsters and buyers to meet growers and discuss with them the grading of samples (some 200 of which had been sent in from all parts of the country and examined by the Barley Valuation Committee), the reasons for such grading, and the properties needed in good malting barley.

HOPS

Cultivation of New Varieties

The first subject in chronological order which the newly formed Research Fund Committee approached, was that of hops. This was in 1920 and was in response to efforts by the South-Eastern Agricultural College, Wye, to secure the co-operation of brewers and brewing experts in the work of selecting and testing new seedling varieties of hops raised at Wye.

The college had been engaged on this work since 1909, the cost, which amounted to about £190 per year, being a charge on its ordinary income. With the expenses of carrying on the College increasing, the Governors found it difficult even to maintain the work and could not contribute any funds for its further development.

The practice had been to plant out in the College trial garden the seedlings raised in its greenhouses. Varieties showing promise of being heavy croppers of good quality and disease-resistant, were transferred for tests on a larger scale to the hop garden of the East Malling Fruit and Hop Research Station. Seedlings with promising characteristics accounted for a very small percentage of the total number raised.

A "museum", consisting of the chief cultivated varieties of hops of the world, and selected male hops to be used as parents, had also to be maintained.

At East Malling the cost of testing the selected seedlings was, as a rule, met by the sale of the hops (except in the case of the expense incurred by drying small quantities in oasts at a distance from the garden). The value of the investigations at this station could, it was felt, be greatly increased by the provision of an experimental oast on the spot. In this, small quantities of hops could be dried and investigations on drying carried on.

On the recommendation of the Advisory Sub-committee on Hops, the Research Fund Committee decided in 1920 that every effort should be made to maintain the work on hops at Wye, and that this work should be extended so far as it related to the raising of new varieties, their testing from the growers' and brewers' points of view, and the

various methods of drying hops. An annual grant of £500 was therefore made in 1920 to cover one half of the cost of maintenance of the hop nursery (the College being responsible for the other half), less one half of the proceeds of the sales of hops; the salary of a part-time investigator to be appointed by the College; and laboratory expenses in connection with the chemical analysis of the hops raised at Wye and grown on a commercial scale at East Malling.

This grant was followed in 1921 by a donation of £700 towards the erection of a commercial oast at East Malling.

Between 1918 and 1934 annual reports on the trial of new varieties of hops were published in the *Journal of the Institute*.

Various Investigations on Hops

In the early days of the Research Fund Scheme it was recognised that an investigation of the preservative principles of hops was of paramount importance. With the approval, therefore, of the Governing Body of the College of Technology, Manchester, investigations were begun in the College in 1920 under the direction of Professor F. L. Pyman, F.R.S. On Professor Pyman's resignation in 1927, control of the research passed to Dr. T. K. Walker. Numerous reports on this investigation were published in the *Journal* between 1922 and 1933, and a summary of the work during the whole period was prepared by Dr. Walker and published in 1935.

By the kindness of Mr. T. I. Nicholson (Horsmonden) and Mr. F. Ivo Neame (Chilham), two plots, each of one acre, were placed at the Institute's disposal in 1920 to enable the effect to be ascertained of farmyard manure and artificial fertilisers on the brewing value of the hop.

Each acre* was divided into twelve parts or plots separated from each other by guard rows of unmanured hops. Six different manurial dressings were used, the plots being in duplicate.

The Horsmonden experiments were discontinued in 1928 and those at Chilham in 1931. Both provided much useful information, not only on the brewing value of hops manured under varying conditions, but also on deductions possible from a study of appearance in the field. Indeed, as a result of this work, it was possible to recognise the symptoms of a deficiency of nitrogen or potash from the appearance of the plant. The experiments also showed that hops could be grown for a number of years (at least seven) with the help of mineral fertilisers only, without deterioration of quantity or quality of crop.

* In a statute acre of hops there are, under the system used, 1,117 hills planted 6ft. 6 ins. one way and 6 ft. the other.

Three interim reports on this work were published in the Journal, a final report following in 1935.

Another investigation embarked on in 1920 was on the principles of hop drying. In this the Advisory Sub-committee was greatly helped by Whitbread & Co. Ltd., who placed at the disposal of the Institute part of a barn on their Paddock Wood property. Mr. A. H. Burgess, of Wye College, was appointed to carry out this research and four small experimental kilns were erected in the barn at a cost of about £1,600.

The main objects of the investigation were to ascertain the effect of the various factors involved on the actual physical processes of drying; to find the conditions of drying which would give the most valuable product; to discover whether methods other than drying would be more suitable for the preservation of the hop; and to design apparatus to fulfil the requisite conditions.

The investigators were handicapped by the fact that much preliminary work of a fundamental nature had to be carried out (there being a lack of literature on the subject of drying plant products), and also because of the essentially seasonal character of the work.

Eleven reports on the work were published in the Journal between 1922 and 1934.

Early in 1928 a series of investigations was begun in the hope of finding out whether the changes causing the physical deterioration of hops and the diminution of preservative value could be arrested in any way by extra-compression.

The first series of trials, which was carried out with Fuggle hops of the 1927 crop grown in Kent, indicated that extra-compression might well be advantageous. Further trials were therefore carried out.

Brewing Trials

After the first World War, there was a danger that hop gardens, which were grubbed up during the war to grow more food, would be planted with varieties of hops which, though prolific croppers, were not such as should be encouraged. Brewing trials were, for instance, carried out by a number of breweries to demonstrate the inferiority of the "Tolhurst" hop to other varieties. An account of these trials was sent to agricultural advisers and the press, and, as a result, it was estimated that about 90 per cent of the acreage then under cultivation with "Tolhurst" hops was grubbed up.

In 1924 a number of firms undertook to carry out brewing trials with certain new varieties of hops produced at the East Malling Research Station. Some of these investigations were to test the suitability of

the hops as copper hops, others to see if the hops were of the right kind for dry hopping purposes.

The limitations imposed on the brewing trials by the want of an experimental brewery were temporarily met in 1926 by the generosity of the College of Technology, Manchester, which placed its small experimental brewing plant at the disposal of the Institute for some months. Mr. B. N. Thompson, formerly of Morgan's Brewery Co. Ltd., Norwich, was asked by the Advisory Sub-committee to carry out the work and trials were made with some ten seedling varieties from East Malling.

The order in which these seedling hops were placed by the Special Committee which examined them was found to differ very materially from the order in which the beers brewed from them were placed. This indicated the urgent need to ascertain and adopt some standard method by which hops could be examined and assigned a value which would be in accordance with the results of brewing practice.

Trials were carried out in 1928 and 1929 to compare the brewing value, flavour and preservative qualities of certain new varieties of hops with well-established varieties. These experiments showed once again the limitations of hand examination.

In the following year trials were carried out to compare some of the more promising varieties from East Malling, such as Oregon x English and Continental x English seedlings, with selected English hops.

These brewing trials were supplemented by researches carried out at Rothamsted Experimental Station on a laboratory scale, with the two-fold object of ascertaining whether sound conclusions on the flavouring properties of hops could be based on such small trials, and of investigating the relation between the "relative antiseptic value" of worts and beers, and the "relative preservative value" of the hops used in them.

A "Review of the Results of the Hop Trials, 1920/1930", by Mr. H. Lloyd Hind, B.Sc., F.I.C., was published in 1931.

Brewing trials continued during the next three years. Some of these were for the purpose of ascertaining the brewing value, the flavours imparted by hops at different temperatures, and the changes in the preservative constituents of hops occurring during boiling, fermentation and storage.

Visits to Hop Gardens

The Research Fund Committee held the view that arrangements by which growers could be brought into actual touch with the progress of the Institute's research work must be of benefit to both the agricultural

and the brewing industries. Accordingly visits to hop-growing districts in Kent or Worcester or Herefordshire were arranged for each of the eighteen years prior to the second World War (with two exceptions, one of which was a visit to barley fields).

These visits met with appreciative references in the local and general press which was quick to point out the advantages to be gained both by growers and by buyers of hops.

TIMBER

The appointment of the Advisory Sub-committee on Timber, in 1920, arose out of a suggestion made by Mr. W. Waters Butler, and reinforced by Professor J. B. Farmer, D.Sc., F.R.S., which raised the question of investigating timber used for casks, especially American oak. A sum of £1,000 was voted for the investigation and Professor Farmer was elected chairman of the Advisory Sub-committee.

The work was carried out at the Imperial College of Science and Technology, the botanical part being directed by Professor E. R. Groom, F.R.S., and the chemical part by Professor S. B. Schryver, F.R.S.

This research disclosed that there were wide differences in the effects of American oak used for the making of casks. Some American timbers when suitably treated proved quite satisfactory for this purpose; others gave the contents of the cask a woody flavour whatever lining was used.

Three reports on the investigations were published in the *Journal*, and it was suggested that the suitability or unsuitability of a given wood might be due to one or more of three possibilities:—the tree having been felled at an inappropriate season; the wood having been obtained from the wrong part of an appropriate species of tree; or the wood having been obtained from a species of “White oak” incapable of yielding good wood.

To determine which, if any, of these possibilities was correct, the investigation would have to be transferred to the United States. The Committee, therefore, invited the U.S.A. Forest Service to continue the research and offered to carry out the requisite practical tests on such authentic material as might eventually be sent from America for manufacture into beer casks.

Neither the U.S.A. Forestry Department nor the Forest Production Laboratory of the Forest Service was able to help, and, after reference to the American Stave Company, it was decided that the next stage in the investigations was a matter for the importers.

HYDROGEN-ION

An Advisory Sub-committee, with Mr. D. McCandlish, Head Chemist to Joshua Tetley & Son Ltd., Leeds, as Chairman, was appointed in 1923, with a view to starting research on the effect of hydrogen-ions in brewing processes. Mr. G. Hagues was appointed to carry out the work, which was done for a short time in the laboratory of Wm. Younger & Co. Ltd., Edinburgh, but for the greater part of the time in the laboratory of Joshua Tetley & Son Ltd., Leeds.

After five years it was felt that these investigations had reached a stage where they might overlap with the work of the other Advisory Sub-committees. As it happened, however, the work at Leeds automatically ceased when Mr. Hagues was appointed to succeed Mr. McCandlish as Head Chemist to Joshua Tetley & Son Ltd.

A number of reports on the investigations appeared in the Journal between 1924 and 1929.

YEAST

At the first meeting of the Advisory Sub-committee on Yeast in 1923, it was decided to conduct an investigation to determine how far the physical properties of the yeast-cell, such as strength and permeability of cell-wall, affect the resistance of yeast to autolysis and infection, and how far these properties may be influenced by environment. Professor S. B. Schryver, F.R.S., was asked to direct the work and Miss E. M. Thomas (who had just completed the timber investigations under Professor Schryver) was appointed to conduct the preliminary experiments. The work was carried out at the Imperial College of Science and Technology.

After a large number of experiments had been made, first on the strength of cell-walls and later on the phenomena of autolysis, the research was extended to cover work on the nature and function of the proteoclastic ferments of yeast, and an endeavour was made to perfect methods for the more exact estimation of certain constituents of wort.

On the death of Professor Schryver in 1929, a Special Committee was appointed to review the situation and indicate the lines on which the work should proceed. It was decided that the research should take the form of an investigation of fundamental problems in connection with the nutrition of yeast; that a trained organic chemist should be appointed for the very difficult work involved; and that he should be given a period of special training before he embarked on this work, such training to consist of several short terms in breweries of different types and a course of special training in yeast technique in Copenhagen.

THE EVOLUTION OF THE RESEARCH FUND SCHEME, 1919-1934

Mr. R. S. W. Thorne was appointed in 1929 for the work, and after the period of special training in yeast technique, laboratory accommodation was found for him at Cadby Hall, through the generosity of J. Lyons & Co. Ltd. He joined the research staff in the University of Birmingham in 1934, but in the meantime had prepared a review of the published literature on "The Nitrogen Nutrition of Yeast". Three reports on his work were published in the Journal, namely in 1932 and 1933.

GRANTS TO INDIVIDUAL WORKERS

In addition to the initiation of researches through its Sub-committees, the Research Fund Committee felt that it was an important part of its duties to consider applications from individual investigators for grants from the Fund. To that end, regulations were incorporated in the Scheme. A number of small grants was made during the period under review on the understanding that the results of the subsequent investigations would be placed at the sole disposal of the Committee.

COMMISSION OF ENQUIRY

At the end of 1931 a Commission of Enquiry consisting of Professor J. C. Drummond and Professor H. Raistrick, was appointed by the Research Fund Committee "to consider the working of the Research Scheme, with power to visit the various centres of research, to make such enquiries as to them may seem desirable and to report their findings to the Committee in due course".

The report of this Commission, which was submitted to a Special Committee for consideration and report to the Research Fund Committee, contained as its main recommendation the advisability of concentrating, as far as possible, the experimental work at one centre. The only entirely satisfactory plan, said the report, would be the establishment of a central Research Institute, a project which had been examined more than once by the Research Fund Committee. This Research Institute, as envisaged by Professor Drummond and Professor Raistrick, would be somewhat on the lines of the Institut für Garungsgewerbe in Berlin and would comprise departments for scientific and technical research, a school of training for brewers and an information bureau and analytical service. Failing a scheme of this magnitude being put into operation, centralisation of the bulk of the research either at the British School of Malting and Brewing in the University of Birmingham, or in the Department of Brewing at the College of Technology, Manchester, would be most advisable. Birmingham would be preferable if there were a likelihood of an experimental plant for brewing being installed there.

The Commission also recommended the appointment of a full-time Director of Research and a small Sub-committee whose duties would be to confer with the Director on the progress of the work, and to advise him on recommendations submitted by the Sub-committees appointed for special fields of work.

The Special Committee, reporting in turn in 1933 to the Research Fund Committee, recommended that steps should be taken to centralise as much of the research work as possible in Birmingham; that a whole-time Director of Research should be appointed; and that a small Executive Committee should be set up to confer with the Director on the progress of the work. The Committee also expressed the view that, while continued co-operation with Wye College and the Rothamsted Experimental Station was highly desirable, the measure of such co-operation must depend ultimately on the funds at the Institute's disposal.

The University of Birmingham had already unofficially agreed with the project and also were agreeable, pending the appointment of a Director of Research, to allow Professor R. H. Hopkins, D.Sc., the head of the department in which the Institute's research unit would be placed, to exercise a general supervision over the work.

All these arrangements were satisfactorily concluded and Professor Hopkins was appointed to supervise the work as from April 1st, 1934. Thus the biochemical work on barley, formerly at Rothamsted, and the work on yeast, from Hammersmith, were centred in Birmingham.

In June, 1934, Sir William Waters Butler generously presented to the Institute the sum of £2,000 to defray the cost of plant and apparatus* for the laboratories, a condition of the gift being that purchases made by means of this sum should revert to the University should the Institute's work there come to an end.

SECRETARIAT

Mr. W. H. Bird, who had been Acting Secretary since Mr. Julian L. Baker's retirement, was appointed Secretary of the Institute in 1919. An Assistant Secretary, Mr. C. E. Randell, who had been on the Institute's staff since 1914, was appointed in 1925. After holding that appointment for five years, however, Mr. Randell resigned to take up the position of Editor of the *Brewer's Journal*.

* The design and construction of the experimental brewery was entrusted to the Aluminium Plant & Vessel Co. Ltd., and this company was authorised in 1938 by the Research Fund Committee to make replicas for other institutes and firms requiring similar plant for research purposes.

PART IV

YEARS OF GAIN—AND LOSS

1935-1945

This period which covered the six years of the second World War witnessed the destruction, through enemy action, of Brewers' Hall and the loss of most of the Institute's property. On the other hand, it was remarkable for the impetus given to the activities of the Institute generally, and to research in particular.

MEMBERSHIP

The Rule governing the admission of ordinary members (Rule 9) and the question of its adequacy, in view of the objects of the Institute, has been debated on many occasions by the Council and Committees of the Sections. As has been recounted in this History, various categories of persons deemed eligible for membership were added from time to time to those covered by the original Rule (which was adopted when the "new" Institute came into being in 1904). In March, 1944, the list of such persons comprised seven categories:—

1. Persons carrying on business, and whether alone or in partnership with other persons or as directors of companies, as brewers of beer or vinegar, maltsters, distillers, coopers, barley and hop merchants and hop factors, manufacturers of cider and wine, barley and hop growers, and managers of bottling stores.

2. Technical brewers, maltsters and distillers.

3. Secretaries of companies, managers, chemists, engineers and coopers, exclusively or mainly employed as such in breweries, maltings and distilleries.

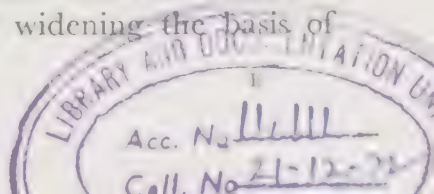
4. Chemists, technical engineers and coopers and architects whose practice or business, as the case may be, is closely identified with the fermentation industries.

5. Professors, teachers and chemists who instruct and train students for the said industries.

6. The pupils of persons comprised in paragraphs 2, 3, 4 and 5.

7. Students of public brewing schools recognised as such by the Council.

At a meeting of the Council in this month suggestions were submitted by Mr. H. W. Harman, the then President, which would have had the effect of abolishing Rule 9 and considerably widening the basis of



eligibility for ordinary membership. These suggestions were discussed by the Sections and were generally approved, subject to certain emendations, by all except the Midland Counties' Section. In view of this divergence of opinion, the Committee of the Scottish Section submitted a redraft of Mr. Harman's proposals and these were put forward by the Council, with a recommendation for their acceptance, for consideration by the members of the Institute at the Annual General Meeting in April, 1945. At this meeting it was accordingly resolved to cancel Rule 9 and to substitute the following Rule for it:—

“Ordinary Members shall be persons who are associated directly or indirectly with the fermentation industries and who by reason of their position or qualifications or attainments are in the opinion of the Council able to further the objects of the Institute.”

Other resolutions provided that applicants for ordinary membership should be nominated by two members who should certify from their personal knowledge the applicant's fitness for election; that, in the case of applicants from the United Kingdom or Eire, the sponsors should have been members of the particular Section which the applicant wished to join for at least two years; that, before the name of a candidate was submitted to the Council, two-thirds of the members of the Committee of that Section should vote in favour of his election; and that, furthermore, no candidate should be elected by the Council unless two-thirds of the members present should assent to the proposal.

THE SECTIONS

The periodical meetings of the Sections continued to provide a most valuable “clearing house” for the dissemination of useful information throughout the industry. This was particularly noticeable during the War years.

A Meeting in Bristol

Mr. Christopher George (the then President) presided over a very successful meeting of members of the Institute and others, numbering some 180 persons, which was held in Bristol in November, 1935. Papers on the Institute's researches were read by Messrs. G. T. Cook, H. M. Lancaster and W. J. Watkins and visits were paid to the factories of W. D. & H. O. Wills, Ltd., and J. S. Fry & Sons, Ltd., and to the Bristol Brewery, Georges & Co. Ltd.

Retirements

In 1935 Sir William Waters Butler retired from the office of Honorary Treasurer of the Midland Counties' Section which he had held for

twenty-five years, and, at the annual dinner of the Section that year, he was presented by the members with a silver salver as a token of their gratitude, high regard and esteem.

It is fitting at this point to pay a tribute to the services of Sir William to the brewing industry and, in particular, to the Institute. His generosity in providing funds for the plant and apparatus needed when the Institute's research staff moved to Birmingham (a move which his efforts made possible), which has already been mentioned, was only one of his many contributions towards the progress of the industry.

Sir William, who was born in 1866, was a Life Governor and a member of the Council of the University of Birmingham for over thirty years. He was closely identified with the foundation of the British School of Malting and Brewing and with the establishment of the Adrian Brown Chair of Brewing. His gifts to the University included a sum of £50,000 towards a new biological block and a further £10,000 for the foundation of scholarships in commemoration of Joseph Chamberlain.

There was no branch of the brewing industry with which Sir William was not familiar and in which he was not fully informed. In 1902 he became the second President of the Institute of Brewing and was always ready to serve on its Committees and to give it the benefit of his advice and experience. For four years he was Chairman of the old Midland Counties Institute, and after the amalgamation of the various Institutes, served, as already recorded, as Hon. Treasurer of the Midland Counties Section. At the early age of forty-two he was elected to the chair of the Brewers' Society and was appointed a member of the State Management Control Board during the first World War. Sir William was elected Chairman of Mitchells and Butlers, Ltd., Birmingham, in 1914.

The Training of the Technical Brewer

In 1945 the Committee of the Scottish Section, which had interested itself in the future training of technical brewers, appointed a Subcommittee to approach the Brewers' Association of Scotland, the Scottish Section of the Incorporated Brewers' Guild and the Heriot-Watt College, with a view to the formation of a joint Advisory Committee. It was suggested that this Advisory Committee might consider, and make recommendations, within the framework of the Institute, on the methods to be adopted for the future training of technical brewers in Scotland; the desirability of setting up an advisory panel to help prospective brewers and their parents; and the preparation and

maintenance of a register of brewers prepared to accept pupils. The Sub-committee's report on these matters was discussed at a meeting of the Section in 1947.

IMPORTED BARLEYS

The Midland Counties' Section in 1934 drew the attention of the Council to a report that the Government was being called upon by interested parties to introduce a Bill providing that malting barley should only be imported under licence and that imports should be controlled by a "Malting Barley Marketing Board". The Committee of the Section put forward the view that, with the vagaries of the English climate, imports of grain were often vitally necessary for the production of sound beer; that the amount of grain required from year to year could only be estimated by men with a full knowledge and experience of the technology of brewing in all its aspects; and that it was not a matter which could be dealt with by any Government Department without incurring grave dangers.

Some months later, in May, 1935, applications were made to the Import Duties Advisory Committee by the Scottish Chamber of Agriculture and the National Farmers' Union for certain duties on imported foreign barley. The Scottish Chamber of Agriculture asked for a substituted duty of 2s. 6d. per cwt. on all imported barley, while the N.F.U. petitioned for a substituted duty of 20s. 0d. per quarter (5s. 0d. per cwt.) on imported malting barley, with a corresponding duty on sugar, molasses, etc., maize and rice grits and flakes and other substitutes of foreign origin imported for use in brewing.

Accordingly, a memorandum on the technical aspects of the question, prepared by the Council of the Institute, was submitted to the Import Duties Advisory Committee by the Brewers' Society. A panel of technical brewers was also appointed by the Institute to confer with the Brewers' Society, should the occasion arise, on this problem.

BRITISH STANDARDS INSTITUTION

Subjects on which the Institute and the British Standards Institution were both interested during the period under review included brewers' flasks, coal-burning appliances and tests for rubber and rubber products. In 1935, the Institute, with the help of its Analysis Committee, assisted in the preparation of a B.S.I. specification for brewers' flasks, one of a series on scientific glassware. This was published in 1937.

Also in 1935 the Council appointed Mr. F. H. Jeacock to represent the Institute on a B.S.I. Committee engaged on drawing up a "glossary

of coal-burning appliances"; and Mr. A. J. C. Cosbie and Mr. R. J. B. Storey were similarly appointed in connection with a conference held that year to consider the desirability and co-ordination of tests for rubber and rubber products.

JUBILEE OF THE LABORATORY CLUB

The fiftieth anniversary of the foundation of the old Laboratory Club, the forerunner of The Institute of Brewing, fell in 1935. To celebrate this event, the Council, on the recommendation of its General Purposes Committee, decided to grant life membership of the Institute to those surviving members of the Club who were still on its books: at the same time it was decided that any member of the Institute reaching the fiftieth uninterrupted anniversary of his election should automatically qualify for life membership, with all the privileges of ordinary membership. Honorary membership was also conferred, as a mark of the Institute's appreciation of their services to the industry, on Mr. C. H. Babington (the Institute's first President), Sir William Waters Butler (second President), Professor Arthur Harden, F.R.S., and Sir E. John Russell, O.B.E., F.R.S. Other steps taken to mark the occasion were a Jubilee banquet and the publication of a Jubilee number of the Journal.

HORACE BROWN MEDAL

At a meeting of the Council held in October, 1936, it was unanimously resolved that the next award of the Horace Brown Medal should be made to Sir William Waters Butler.

The next recipient was Mr. John Simpson Ford, F.R.S.E., who was awarded the medal in 1940. The presentation was made to Mr. Ford at a meeting held in Edinburgh in September, 1941, when he read a paper entitled "Physico-chemical laws, living matter and fluctuations". His memorial lecture, "Fragments from a Laboratory Log", was published later in the Journal.

EDUCATION

The question of ensuring that entrants to the profession of brewing had adequate training for their positions continued to exercise the Council. In 1935, for instance, the Examinations Committee was asked to review the existing facilities for training and more particularly to consider whether such facilities as were obtainable by brewing students at the Heriot-Watt College in Edinburgh could be provided in England.

In its report to the Council the Committee drew attention to the fact that, in addition to the special courses of study for brewing students

available at the University of Birmingham, the Sir John Cass Technical Institute, London, and the College of Technology, Manchester, there were some 250 technical colleges or more distributed throughout the United Kingdom in any of which adequate tuition for Part I of the examination could be obtained in at least chemistry and physics. The fact remained, however, that the number of provincial breweries with facilities for brewing pupils was very limited, although there was a growing tendency among those who took pupils to encourage them to attend classes at the local technical college.

With regard particularly to London, the Committee pointed out that, whereas in Edinburgh there were over twenty breweries, the majority of which insisted on their premium-paying pupils' attending the day-classes provided by the Heriot-Watt College, there were very few London breweries, owing no doubt to their greater size, which had facilities for such classes.

Subsequently the Sir John Cass Technical Institute approached breweries in and around London, pointing out the training facilities available at the College and suggesting that time off might be granted to members of the junior staffs of breweries to enable them to attend a full graded course of training; in Manchester, the College of Technology, at the joint instigation of the North of England Section of the Institute and the Manchester and District Brewers' Society, took steps to increase its facilities for the training of brewing students; and a circular, prepared by the Examinations Committee, giving particulars of the special courses of training available in London, Birmingham, Manchester and Edinburgh, was issued, in 1936, by the Brewers' Society, at the invitation of the Council, to all brewers.

As a further measure, a conference between members of the Court of the Brewers' Company and of the Council of the Institute met in November, 1936, to consider how brewing firms in the London area could co-operate with the Sir John Cass Technical Institute in assisting junior brewers and brewery pupils to obtain the necessary training, and to compile a list of those willing to collaborate to this end. The conference decided that this latter question should be referred to the London Brewers' Council, but put forward two concrete suggestions for consideration by the Court of the Brewers' Company. The first of these was to ask the Court whether its members, when filling vacancies on their brewing staffs, could give preference, where possible to applicants who had passed the Institute's examinations; the second was to ask the Court to influence its members to give every facility, by leave of absence, arrangement of duties and so on, to junior brewers on their staff who had not passed the Institute's examinations, to take a course

of study with that end in view. Both these requests were favourably received by the Court of the Brewers' Company, while the London Brewers' Council showed itself equally ready to urge its members to co-operate with the Sir John Cass Technical Institute.

SCHOLARSHIPS

Towards the end of 1937, the question was raised by the University of Birmingham whether the Institute would be prepared to found a number of scholarships tenable in the British School of Malting and Brewing. The Council approved this suggestion and remitted it to the Examinations Committee and also to the Brewers' Society. The Society appointed a special Scholarship Sub-committee to consider the matter and, at its first meeting, which was attended by representatives of the Institute, certain recommendations, of which the following were the principal, were made :—

Each scholarship should be one of £100 a year for four years, for the purpose of training the most suitable candidate available in the year of award for a career in the brewing industry. The successful candidate would, therefore, be expected to give an undertaking to enter the industry after leaving the University.

The scholar would be required to take the course in the British School of Malting and Brewing leading to the degree of B.Sc. in industrial fermentation (three years) and the post-graduate course in malting and brewing leading to the diploma (one year).

Applicants would have to be candidates for the Higher School Certificate of a recognised examining body in the year in which they were candidates for the scholarship. When the results of the Higher School Certificate examinations were known at the beginning of the autumn, the Scholarship Committee of the University would forward the names of the five or six examinees most successful to any Committee set up by the brewing industry, which in turn could interview and make a selection from these candidates.

One such £100 scholarship should be awarded in each of four successive years, as the experimental period, involving a total expenditure of £1,600 spread over seven years.

If possible, during the third and fourth years of the course, the student should spend part of the long vacation in practical brewing in a brewery and a short time at another period of the year in practical malting. But it was undesirable for a student to go from one brewery to another; each student, therefore, should be adopted by a single brewery, although such adoption would carry no guarantee of eventual employment.

The continuance of the scholarship should be subject to reports on the student's work and conduct.

The Examinations Committee gave its unanimous approval to these recommendations and expressed the hope that every assistance would be afforded to the Brewers' Society by the Institute to make the scheme a success.

Sir William Waters Butler generously offered to subscribe £1,000 towards the cost of the experimental period, which amount was supplemented by sums received as the result of an appeal by the Brewers' Society to its members. The Society eventually decided to award two scholarships, each of the value of £100 a year for four years, in 1938, and two further scholarships of equal value in 1940.

It was agreed that the Selection Committee should be composed of representatives of the Brewers' Society, The Institute of Brewing and the Incorporated Brewers' Guild. The Institute's representatives on this Committee were the President and the Chairman of the Examinations Committee.

A further scholarship, on similar lines and also tenable at the University of Birmingham, was endowed by Mr. Arthur Mitchell in memory of his father. This was to be known as the "Henry Mitchell Scholarship" and the first award was made in 1940.

EVOLUTION OF THE EXAMINATION SCHEME

In the early days of the Institute's Examination Scheme it was found that a number of candidates, already employed as brewers, were unable to enter for the Institute's examinations owing to the fact that they had not passed one of the qualifying preliminary examinations. In order, therefore, to obviate a possible hardship, it was decided that, for a limited period, candidates who had failed to obtain the certificate of one of the recognised preliminary examinations should not be debarred from taking the Institute's examinations, provided that they could produce a satisfactory certificate from their old school in respect of their general education.

This concession was withdrawn at the end of 1937, candidates being required thereafter to pass the Matriculation Examination or to obtain the School Leaving Certificate or the certificate of some analogous examination. As a temporary expedient during the War, there were added to this list examinations for various Army certificates and the Intermediate Examination of the Pharmaceutical Society.

It was decided that, after December 31st, 1937, exemptions from Part I (a) and (b) of the examination should be limited to the diplomas

of brewing granted respectively by the University of Birmingham and the Heriot-Watt College and to an approved degree in science by examination.

In 1937, too, it was decided to award a "Pass with Distinction" in Part I of the examination to candidates obtaining not less than 70 per cent of the total marks allotted, with a minimum of 50 per cent in each subject.

A regulation was also framed in the same year to cover the necessity for the submission of certified notebooks as evidence of practical laboratory work.

In view of the widespread interest in the Examination Scheme, the membership of the Examination Committee was increased in the same year, on its own recommendation, from twelve to eighteen (of whom twelve were to be technical brewers).

In 1945, the membership was further increased by the decision to invite the Incorporated Brewers' Guild to nominate a delegate to attend meetings of the Committee.

Arrangements were made during the second World War, through the Red Cross Society, for the Institute's examinations to be held in Prisoner of War Camps in Germany.

"Advice to Students"

Some amendments to the Institute's "Advice to Students" (see page 30) were made, the effect of which was to suggest that those wishing to enter the profession of brewing should obtain an approved University degree or the diploma of certain technical colleges which exempted from Part I of the Institute's examination, followed by practical brewery experience, or, if that were not possible, to undergo a period of pupilage in a brewery, preceded or accompanied by technical college or other training with a view to taking Part I of the examination.

SIR WILLIAM WATERS BUTLER'S BEQUEST

Sir William Waters Butler, who died in 1939, bequeathed to the Council of the Institute the sum of £500, the income from which was to provide a medal (to be known as the "Sir William Waters Butler Medal") which would be awarded every third year in recognition of the services of any person, firm or company in the advancement of the science or practice of brewing or, alternatively, the income should be used to remunerate any person, firm or company for a piece of research designed to advance the science or practice of brewing.

A HISTORY OF THE INSTITUTE OF BREWING

A RESOLUTION OF THE BREWERS' SOCIETY

A tribute to the growing usefulness of the work of the Institute was paid by the industry in 1939 when the following resolution was passed by the Council of the Brewers' Society:—

“The Council desire to convey to The Institute of Brewing an expression of their appreciation of the services which the Institute is rendering to an increasing extent in the technical problems of the brewing trade.”

THE SECOND WORLD WAR

Registers for National Service

A Central Register, for meeting such demands as might arise, through the exigencies of war, for the employment of persons with scientific, technical, professional and higher administrative qualifications, in Government service or elsewhere, was compiled on the outbreak of war by the National Service Department of the Ministry of Labour. The Institute of Brewing was one of the organisations invited to co-operate with the Department in the compilation of this register and a suitable notice was issued to its members in 1939, some twenty of whom were subsequently enrolled.

A second Register, prepared by the Department of Scientific and Industrial Research at the request of the Government, was compiled to list scientific and research laboratories (excluding those for agriculture and medicine), since it was considered that in some cases greater service would be rendered by organised teams of research acting as a unit rather than as individuals. One of the teams selected for inclusion in this register was the Research Organisation of The Institute of Brewing.

The Loss of Brewers' Hall

During the night of Sunday, December 29th, 1940, Brewers' Hall,* for forty years the home, by courtesy of the Brewers' Company, of The Institute of Brewing, was totally destroyed by incendiary bombs.

Fortunately, the Secretary was able to salvage all the Minute Books of the Council and of the Research Fund Committee and the Minutes of a number of other Committees, together with a complete list of members of the Institute since its beginnings as the Laboratory Club in 1886. This list had only recently been compiled. With these few

* Old Brewers' Hall was destroyed in the Great Fire of 1666, although luckily many of its early records survived, and was rebuilt partly by the subscriptions of members of the Brewers' Company and partly by money raised through pawning plate—which was never redeemed. The premises were, however, not wholly the freehold of the Company until 1860.

exceptions, the whole of the Institute's property, including some thousands of copies of the Journal and the Library of the London Section, was destroyed.

During the next few months the Secretary and a small staff found refuge with the Brewers' Society. Later, in June, 1941, limited accommodation was provided by the Goring Hotel, where the office remained until April, 1949.

At the Annual General Meeting held in March, 1941, votes of thanks both to the Brewers' Company and to the Brewers' Society were passed. The first of these expressed the pride and gratitude felt by members of the Institute at being privileged for forty years to occupy rooms at Brewers' Hall and thus enabled to enjoy its incomparable facilities. The second conveyed to the Chairman and Council of the Brewers' Society and to the Chairman of the National Trade Defence Association the Institute's grateful thanks for their kindness in providing facilities for the Institute's work at 5, Upper Belgrave Street.

In return, later in that year, the Court of the Brewers' Company expressed the hope that, when Brewers' Hall should be rebuilt, it would again house the Institute.

WAR-TIME PROBLEMS

The need for research on substitute materials of various kinds made itself felt early in the war and, in 1940, a Sub-committee of the Ministerial Committee on Economic Policy was appointed to consider this question and to submit at an early date a survey on the research and development then in progress. The Institute of Brewing was one of the bodies invited to provide for the confidential information of this Sub-committee a note on the nature of any research being carried out by its research departments on substitute materials. It was suggested that the note should state whether such research was being conducted to meet difficulties arising from an actual or anticipated shortage of raw materials or whether it was aimed at the development of new materials.

The Institute appointed a Special Committee to consider the matter, and some weeks later a report was made to the Ministerial Sub-committee. This was to the effect that, while there had been considerable research for many years aimed at improving the materials used in brewing, there had been no specific research on substitute materials. Indeed, this was hardly possible since no materials were suitable, or even permitted, in brewing other than malt, corn, sugar, hops and yeast. The only possible alternative materials, therefore, could only be obtained by the substitution of home-grown for certain

foreign cereals, a matter on which the Brewers' Society was in close touch with the Ministry of Food.

Another Government department which sought information from the trade through the Institute was the Salvage Department of the Ministry of Supply. This was in connection with brewery waste products, other than yeast. In 1940, a questionnaire was sent out to some 470 brewers for the purpose of ascertaining the approximate total amount of such waste products and the manner in which they were utilised.

The answers to this questionnaire were among the documents recovered from the ruins of Brewers' Hall. An analysis of them enabled the Institute to issue in the following year a memorandum of advice on the disposal of such waste products as spent hops, grains, waste rubber, crown corks, sawdust and wood cuttings, old ropes, label pulp, filter pulp, filter sheets, hop pockets and cullet. The Ministry's Salvage Department also issued a memorandum, which was published in the Institute's Journal, on the use of waste wood as a fertilising medium.

This information, particularly in regard to cullet, was found to be of assistance to a number of breweries.

Flaked Barley, and Oats

At the instance of the Ministry of Food, meetings were held in the latter part of 1941 between representatives of the Institute and the Brewers' Society to consider how far the available supply of malt might be conserved by the use of flaked barley. With the concurrence of the chief manufacturers of flaked materials, a specification was drawn up laying down five *desiderata*: moisture content to be not more than 10 per cent at the mill and not more than 12 per cent on delivery at the brewery; extract to be in the region of 83-85 (based on The Institute of Brewing Method in respect of the analysis of flaked maize); flakes to be thin; barley of good quality only to be used; and whole corns to be eliminated.

A few weeks later, in February, 1942, the Council was informed that the supply of barley was diminishing and that brewers would be well advised to obtain as much ground barley as possible. There followed, at the beginning of the next year, a ministerial request to brewers to reduce their consumption of barley by 10 per cent by weight and to replace it by an equivalent amount (15 per cent by weight) of oats, while maintaining the output of beer at its then level.

The technical problems involved in this request were referred by the Brewers' Society to the Institute, which without delay appointed an Emergency Committee to consider the matter.

In discussions with representatives of the Association of Flakers, it was found that the market for oats was affected by a number of factors influencing the availability of suitable oats. The brewing industry, therefore, would have little or no scope in purchasing this material. It was also ascertained that there was a possibility of the disappearance of the 1942 crop before the following year's crop came on the market. On the other hand, the use of the required percentage of oats in brewing was wholly dependent on a continued supply of suitable oats. These conflicting facts were reported to the Ministry of Food.

During 1943 meetings of the Sections were called to discuss the question of the use of oats in brewing and reprints of papers* on the subject, together with the discussions thereon, were circulated with an invitation to brewers to keep the Committee informed on any points of general interest arising out of their brewings with oats. At the same time it was pointed out to the industry that there was a general consensus of opinion that a percentage of oats of quality could safely be used and brewers were urged to comply with the Ministry's directions.

An investigation carried out in the Institute's research laboratories at the instance of the Ministry showed that first quality black oats could be used as successfully as good quality white oats.

By October, 1943, the industry's efforts had had their effect and it was reported that the "target", i.e. the saving of 75,000 tons of barley, had been reached. Thereafter, however, the balance of supplies of home-grown cereals changed materially, the quantity of oats for all purposes falling short of requirements, whereas barley proved to be in relatively good supply. Brewers were, therefore, asked to revert to the former position before the use of oats was called for, namely that flaked or ground barley should constitute 10 per cent of the total grist.

An Emergency Committee

As a result of the quickly changing situations arising out of the progress of the war, the Council determined in 1943 to appoint and keep in being an Emergency Committee to receive information from the Brewers' Society on "such matters affecting the brewing industry as a whole as may be referred to the Institute by the Society". The Committee was empowered "to take such action and do all such things as the urgency of the enquiry may demand", and, since it might have to be summoned at short notice, its membership was drawn largely from London members of the Institute, for travel at that time was difficult and subject to delay.

* By Professor R. H. Hopkins, Mr. F. E. B. Moritz and Mr. L. C. Thompson, respectively. A supplementary report by Professor Hopkins on work carried out at the Institute's research laboratories was published in the Journal in June.

Concentrated Beer

The Ministry of Transport was the next Government department to seek the advice of the industry. Early in 1942 the Ministry asked about the possibility of producing beer in a concentrated form, and the question, which had been raised with the Brewers' Society, was passed on to the Institute for its opinion which was that the suggestion appeared to be impracticable, apart from the fact that the necessary plant for concentration was unobtainable.

Decontamination of Crops

The question of the salvage and decontamination of barleys and malts, which might have suffered under persistent war gases, was another war-time problem calling for study. Two reports on the subject were prepared in 1943 and 1944 for the Institute by Dr. D. J. Watson of Rothamsted Experimental Station, and Mr. C. Williams, of the Chemical Defence Experimental Station at Porton, respectively.

A Call for Fuel Economy

Early in the war it became apparent that economy in the use of all fuels was of paramount importance to ensure the supply of fuel to meet the ever-increasing demands by industries engaged on war production, in addition to the ordinary basic trades of the country. Accordingly, the Ministry of Mines (which later became the Ministry of Fuel and Power) appointed an expert Committee to investigate and report on measures for increasing the efficiency of fuel usage, and invited every organised industry to collaborate with it.

At the instigation, therefore, of the Brewers' Society, the Council of the Institute set up a Committee in 1941, to co-operate with the Ministry's Fuel Efficiency Committee and to investigate ways by which economies in fuel could be made in the brewing industry.

The work of this Committee, which was under the Chairmanship of Sir Sydney O. Nevile, was, in due course, co-ordinated with that of the Coal Sub-committee of the Parliamentary Committee of the Brewers' Society, and joint meetings were held, at which representatives of both the Ministry of Food and the Ministry of Fuel and Power were present.

A first step was to re-draft the "Fuel Economy Memorandum" issued by the Institute in 1918. This was sent in January, 1942, with a covering letter, to all brewers and bottlers of beer and also to the brewing journals.

Copies of appropriate Fuel Efficiency Bulletins prepared by the Ministry of Fuel and Power were also circulated and were reprinted in the Journal.

Technical Panels Appointed

The fuel consumption figures of a large number of breweries and other available information were considered by the Brewers' Society. This information showed that some firms had been able to achieve very great economies in their fuel consumption, but, in view of the seriousness of the coal situation, it was urged that even the most efficient breweries should aim at still further economies. The question of an appointment of a fuel efficiency officer for the industry was considered, but, as an alternative, the Institute decided to set up a panel of technical brewers for each of the Civil Defence Regions. These panels were at the service of any brewery seeking the Institute's advice or help on the subject of fuel economy.

That this drive for fuel economy was proving successful was apparent by the beginning of 1943, and, in that year, particulars of the substantial economies effected by some twenty firms were published for the information of the industry generally.

It was of paramount importance, however, to make sure, in any general allocation of coal, that all possible measures were being taken to maintain the maximum output of beer. Brewers were, therefore, asked by the Society to apply to their local Regional Fuel Efficiency Committee for a visit by an engineer on the Committee's staff jointly with a member of one of the Institute's panels.

Nevertheless, it was found impracticable to arrive at any successful correlation of fuel consumption to unit of output. The difficulty lay in the wide variations in such factors as the quality of the available fuel, the age and efficiency of plant and the existence or otherwise of ancillary processes (malting, drying of grains and yeast, bottling and pasteurisation). One probable obstacle to greater economy was the constantly changing quality and type of fuel supplied; representations were, therefore, made to the Ministry that it would be of the utmost help to brewers in improving results if coal supplies to individual breweries were suitable to their requirements and constant in quality. In view, however, of the probability of a continued deterioration in the coal position, brewers were urged to substitute coke for coal either wholly or partly, wherever possible.

Experiments with Lupulin

A meeting was held in the autumn of 1941 between members of the Institute and the Brewers' Society to consider the possibility of easing the existing and prospective shortage of hops by the use of American lupulin (the material which can be shaken out from hop cones when taken from the drying kiln). The Society accordingly obtained 200 lb.

of lupulin from the United States and made arrangements for breweries in various parts of the country to have experimental quantities of this material. Some general lines of experimentation were laid down to ensure that the results should be comparable as far as possible within the limits of the ordinary hop usages of the breweries participating in the trials. A paper on "The Evaluation of Lupulin", by Dr. T. K. Walker and Dr. A. Parker, appeared in the Institute's Journal in 1942, and was followed the next year by a report on the experiments.

Surplus Yeast

In 1941, too, the possibility of diverting the surplus yeast of breweries, for the purposes of human nutrition and animal feeding, was considered by the Institute in collaboration with the Ministry of Food, the Ministry of Supply and the Ministry of Agriculture and Fisheries. The Ministry of Food was impressed with the value of yeast as a human food and, at its request, it was furnished with a list of brewers who could find no ready market for their surplus.

A memorandum on the use of brewers' yeast as food for pigs was prepared in 1941 by the Institute, in consultation with officials of the Ministry of Agriculture and Fisheries and the Ministry of Supply, for the information of farmers and those local authorities who were collecting and sterilising household waste for sale as pig food. Copies were sent, with a covering letter, to all brewers, while the Ministry of Agriculture circulated the memorandum to County Agricultural Organisers and the Ministry of Supply sent copies to the local authorities. An invitation to apply for further copies of the memorandum resulted in the circulation of several thousand additional copies and extra publicity was given by a note on the subject in the "Weekly News Service" issued by the Ministry of Agriculture.

The importance of the subject caused the Ministry in the following year to send further supplies of the Institute's memorandum to the County Demonstrational Sub-committees of the War Agricultural Executive Committee, with a request that all persons interested should get in touch with The Institute of Brewing; and in September of the same year a second and more informative memorandum was printed by the Institute. This was again revised in 1943, with the help of Dr. R. Braude of the National Institute for Research in Dairying, Reading. Concurrently, the Ministry itself issued a "press notice" on the subject of feeding yeast to pigs and poultry. Since then, copies of both documents have been made available to all who have applied to the Institute for information on the subject.

From time to time, individual breweries reported that they were

unable to sell or dispose of their wet yeast; and an analysis of returns received in answer to a questionnaire issued to brewers in October, 1943, showed that there was then, a weekly surplus of about $7\frac{1}{2}$ tons *wet* and $19\frac{1}{2}$ tons *pressed* yeast, or a total in the region of 1,400 tons *per annum* throughout the country, for which a market was sought.

With an increase in the number of food waste concentrator plants in the country, it was suggested that this surplus could, with advantage, be used in the production of concentrated food waste; in addition, the Area Pig Allocation Officers of the Ministry of Food offered to help brewers to market their surplus yeast to local pig keepers.

A list of brewers, together with an approximation of the quantities of yeast available for disposal weekly, was supplied to the Ministry by the Institute.

Women in the Brewing Profession

As the war progressed, it was natural for the subject to arise of the possible need to train suitable lady graduates for certain brewery duties, at least for the period of hostilities. The Council felt that this was a matter which could be left to the discretion of individual firms, a view in which the Council of the Incorporated Brewers' Guild concurred. Membership of the Institute has always been open to women and there are at the present time two women ordinary members.

SCIENTIFIC PUBLICATIONS

Following on suggestions put forward by the Chemical Council on behalf of its three constituent bodies (the Chemical Society, the Royal Institute of Chemistry and the Society of Chemical Industry) a Conference was held at Burlington House in the summer of 1944. The purpose of this meeting, at which the Institute was represented by the Editor of its Journal, Mr. Julian L. Baker, was to discuss the possibilities of closer collaboration between scientific bodies in order to improve, and make more easily available to scientists the various services which these organisations provided. The chief considerations, it was agreed, were three:— to present, through the medium of the various chemical journals, the best service to chemists in particular fields; to see if some co-ordination could be effected in publications not accessible to chemists working outside a given field; and to improve the technicalities of publishing and indexing.

A questionnaire, designed to lead to a further development of these considerations, was issued to the various organisations represented at the Conference. In the case of the Institute, it was referred by the Council to the Publications Committee.

The answers to this questionnaire established the fact that a majority of those bodies approached were in favour of an attempt to achieve uniformity in the method of indexing and in abbreviations and nomenclature. Moreover, it was generally agreed that some rationalisation in respect of papers whose scientific content made them obviously more suitable for publication in a journal other than the one to which they had been submitted, was desirable; at the same time, it was felt that any rigid system of directing papers to particular journals should be avoided.

Mutual contact between editorial boards was, it was felt, the best means of achieving the objects in view, and such co-operation would also be useful in matters relating to the exchange of reprints. A recommendation of the Conference was, therefore, passed to the Societies represented at its deliberations to the effect that publishing Societies should be asked to establish informal contact between editorial staffs and foster informal co-operation between editors. This recommendation was approved by the Council of the Institute.

THE JOURNAL

During the period 1935-1945 some 270 original papers were published in the Journal of The Institute of Brewing.

In 1936, to mark the Jubilee of the foundation of the Laboratory Club a special number of the Journal was issued. In this, a number of contributed articles by leaders of the industry reviewed the developments and technical advances made during the preceding half century.

The exigencies of the country's wartime economy inevitably affected the Journal and in 1942 it was decided to publish it in alternate months instead of monthly. This step was taken in answer to the call for economy in the use of paper.

Just before the outbreak of war, it had been decided, following the lead of other institutes, not to throw the Journal open to advertisements offering professional services.

A third volume of the Collective Index, compiled by Mr. W. H. Bird and Miss F. M. Mapley, was published in 1936. This covered the Journal for the years 1924-34.

A BOOK FOR MALTSTERS

In the same year a series of articles, entitled "The Maltster's Materials and Methods", which had been contributed during the previous two years by Mr. H. M. Lancaster to the *Brewing Trade Review*, was published by the Institute in book form.

JOHN S. FORD MEMORIAL TRUST

In 1945, Mrs. John S. Ford endowed a memorial to her late husband who had died the previous year. Her wish was that the memorial should be of a nature to encourage young brewers, and it was agreed that it should take the form of a monetary prize or prizes in perpetuity for the best student of the year passing Part I of the Institute's Examinations.

This benefaction was increased at a later date and the awards finally took the form of travelling studentships or financial help towards the payment of tuition fees.*

It was also recommended that only candidates of British nationality who had passed Part I of the Institute's examinations should be eligible for the awards; and that trustees should be appointed to administer the fund.

The Council approved these recommendations and a trust deed was duly executed.

John Simpson Ford had served as Chairman of the Research Fund Committee from 1924 to 1926, and the successful evolution of the Institute's research activities during the early years of its existence owed much to his foresight, guidance and practical help.

Born in 1866, Ford entered the brewing industry in 1889 when he was appointed chemist to Wm. Younger & Co. Ltd., Edinburgh. He became a Director of the Company in 1921. He was a member of the Institute, and a valued contributor to its Journal, for many years, serving as Chairman of the Scottish Section in 1908-9.

POST-WAR EDUCATION

A Post-War Educational Committee Appointed

It will be remembered that before the war the Examinations Committee had devoted considerable attention to the question of attracting suitable recruits to the trade. In 1941, a leaflet on "Brewing as a Profession", based largely on the pre-war circular, was issued and circulated among Universities, University Colleges and about eleven hundred schools in Great Britain, and further consideration was given in 1944 to the question of post-war education of young brewers. After studying a memorandum prepared by the Secretary and other documents, the Council resolved to appoint a Special Committee to consider questions "relating to the post-war education and training of prospective entrants to the profession of brewing, and all

* The second alternative was designed to meet the case of students not of an age or experience to obtain the maximum benefit from a travelling studentship.

matters relevant thereto, including the question of concessions to ex-servicemen”.

A questionnaire dealing with matters falling within the scope of the enquiry was sent in due course to each member of the Committee and a survey was prepared based on the replies received.

The report of the Committee, which was adopted by the Council in July, 1945, dealt broadly with pre-vocational and vocational training.

The Committee was opposed to the endowment of brewing scholarships open to a particular school (a well-known public school had suggested this possibility), but it felt that every effort should be made to keep careers masters at public schools informed of the scope and interest of brewing as a profession and of the need for boys contemplating such a career to take up the study of scientific subjects at the appropriate time.

Meanwhile, the Ministry of Labour had prepared a careers pamphlet on brewing for the information of ex-servicemen and it was decided that this might well be sent, as a preliminary step, to the headmasters of ‘Headmasters’ Conference Schools’.

The Committee recommended that all candidates to the profession should be expected to acquire a thorough grounding in the subjects of chemistry (inorganic, physical and organic), physics, plant biology and biochemistry, and obtain either an approved degree in science, followed by a year’s post-graduate course at the British School of Malting and Brewing at the University of Birmingham or the Heriot-Watt College, or the diploma in malting and brewing of either of these establishments or the associate membership of The Institute of Brewing.

Other matters discussed by the Committee included the question of the registration of brewing pupils, the advisability of issuing an ‘Institute Indenture Form’, and the possibility of founding scholarships in the Universities of Oxford, Cambridge, Edinburgh and London, in addition to those tenable at Birmingham. This last matter was referred to the Scholarship Committee of the Brewers’ Society, but the other two questions were felt to be outside the scope of the Institute, although it was agreed that all brewing pupils should regard student membership of the Institute as a *sine qua non*.

Technical Education in Scotland

During the year 1944, the problem of the provision of technical education in Scotland “outwith the Universities” was considered, by invitation of a Special Committee of the Advisory Council on Education in Scotland, by a joint Committee of the Brewers’ Association of

Scotland and the Scottish Section of The Institute of Brewing, under the Chairmanship of Mr. J. Morison Inches.

A memorandum on the subject was duly prepared and sent to the authorities concerned and, later, a deputation from the joint Committee attended a meeting for the purpose of amplifying the statements made in the memorandum. This document, which was approved by the Council of the Institute in October, 1944, dealt with various categories of employee such as the technical brewing staffs, the laboratory staffs of breweries, clerical employees, ordinary brewery workers and coopers. So far as the technical brewer was concerned, it gave a summary of the facilities available for the training of entrants to the industry and pointed out that adequate provision was made for their education and training out with the Universities.

RULES AND REGULATIONS AND BYE-LAWS

In 1935 it was found necessary to reprint the Institute's Rules and Regulations and Bye-Laws and the opportunity was taken at this time to amend them and bring them up to date where this was necessary. Several alterations were accordingly adopted at the Annual General Meeting held in March, 1936. The office of President was limited to subscribing or life members of the Institute. Corporate membership was extended to cover companies and firms of coopers, barley and hop merchants and hop factors, and ordinary membership was enlarged to include directors and partners of such bodies. Another amendment limited the appointed representatives of Corporate members under the Research Fund Scheme to persons eligible for election as ordinary members.

Other alterations gave a vote to deputy representatives of the Sections attending meetings of the Council, empowered the Council to appoint the Institute's bankers as trustees if such were needed, and laid down that Vice-Presidents who, before their election as such had served on the Council in any capacity, should be deemed to have a life-membership of the Council so long as they remained subscribing members.

RESEARCH

Evolution of the Research Scheme

In a paper entitled "Recent Developments in the Institute's Research Work", which was published in the Journal in 1935, Professor R. H. Hopkins reviewed the investigations carried out under the Institute's research scheme during the first fifteen years of its existence. He pointed out that during this period over 140 reports and other communications on the investigations had appeared in the Journal. The

greater number of these—seventy-nine—dealt with hops and brewing trials; thirty-eight described research on barley and malting trials; there were seven on yeast and six on hydrogen-ion concentration.

By the end of 1935, the Research Fund Committee by careful administration of finance aided by a grant of £8,000 from the Brewers' Society out of the balance of funds remaining on the winding up of the Hop Control, had been able to build up a small reserve. At the beginning of 1936, the market value of its investments in Government securities was about £28,000.

Since 1922 the Institute had enjoyed the inestimable advantage of carrying on its barley investigations at the Rothamsted Experimental Station, under the personal guidance of Sir E. John Russell, O.B.E., F.R.S., the Director of the Station and the Chairman of the Institute's Advisory Sub-committee on Barley.

With the publication of the report on the "Ten Years (Barley) Experiments under The Institute of Brewing Research Scheme", which resulted in a complete and fundamental change in the existing knowledge of the barley grain, a stage was reached at which the Committee felt justified in embarking on the next phase of the investigations—a study of the actual processes of malting and brewing. This meant that the agricultural part of the programme was subordinated to this research, although it was recognised that an essential part of the Scheme was the continued co-operation of the Institute with such organisations as the Rothamsted Experimental Station, the National Institute of Agricultural Botany and Wye College, to all of which the industry was under an immense debt of gratitude for past help.

The progress of the researches during the years 1918-39 was reviewed by Sir Gilbert T. Morgan, O.B.E., F.R.S., in a paper published in the Journal in 1940. With the outbreak of war the work was of necessity curtailed to some extent. The Department of Scientific and Industrial Research, however, agreed at an early stage of the hostilities to keep the Institute's research staff intact so far as it was compatible with national requirements, in order that it might help towards the solution of problems concerned with the country's food supplies. Until the end of the war, therefore, work for the D.S.I.R. (whose activities covered investigations of definite importance to the brewing industry as well as research of value to the community generally), was a first charge on the time of the research staff.

Need for a Director of Research

The need for the appointment of a whole-time Director of Research (a question which had been in the minds of the Committee for a number

of years) was becoming more urgent, and in 1937 a Special Committee was appointed to consider the matter. One fact which emerged from its deliberations was the urgent necessity for a separate Research Station to be devoted wholly to the Institute's researches; for a number of reasons, however, finance being a leading one, the setting up of such a Station was impracticable at that time and for some time to come. As a temporary solution to the problem, the appointment of a salaried Chairman of the Research Fund Committee, for a term of years, who could give expert direction to the investigations in hand, was agreed upon. The position was offered in 1938 to Sir Gilbert T. Morgan, and was accepted by him, but his death some two years later cut short an association which promised to be of much benefit to the Institute in particular and to the brewing industry in general, for Sir Gilbert was a man of very high scientific attainments and a brilliant chemist. Before becoming Chairman of the Research Fund Committee, he had held the appointment of Director of the Chemical Research Committee of the Department of Scientific and Industrial Research. At one time or another in his distinguished career, Sir Gilbert had been President of the Chemical Society, President of the Society of Chemical Industry, whose gold medal was conferred on him in 1939, and Chairman of the Bureau of Chemical Abstracts.

Post-War Reconstruction

As early as 1943 the Research Fund Committee, at the instigation of its Chairman, Dr. R. Seligman, began to consider the position when the war should terminate, and each of the Advisory Sub-committees was asked to put forward a list of long-range and short-range researches which it considered should be undertaken. The Chairmen of the Sections were also invited to form an *ad hoc* Committee for the purpose of collecting from the members of the Sections, suggestions for fields of research and investigation.

In the meantime, a Panel was formed to examine such suggestions as were forthcoming and to consider what kind of organisation would be needed to give effect to them.

Over two hundred suggestions were received from the various Committees and individual members and these were examined and grouped under two main headings:—researches which should be carried out intra-murally (that is, by the Institute's own staff in its own establishments); and researches which could best be conducted extra-murally (by means of grants to such bodies as an Agricultural Research Station or a University Laboratory).

Sub-panels were appointed to consider the suggestions in detail.

Their duty was to determine, in the first place, what researches should be carried out, with regard for the demands of any particular investigation for priority; whether the work could best be done intra-murally or extra-murally; what additional staff, plant and buildings would be needed for the researches; and how much was involved in capital and annual expenditure by the programmes.

In 1945 the Research Panel on the Reconstruction of the Research Organisation made its report (which embodied those of the Sub-panels) to the Research Fund Committee, and that body agreed to adopt the documents in question as its own report to the Council of the Institute.

BARLEY

Collaboration continued during the period under review with the Plant Breeding Institute and the National Institute of Agricultural Botany at Cambridge. Visits were made in 1938 and 1939 to both organisations and in the latter year a paper on "Various Aspects of Malting Barley Breeding" was read before the London Section of The Institute of Brewing by Dr. Herbert Hunter, Director of the Plant Breeding Institute.

By 1937 the National Institute of Agricultural Botany had thoroughly tested for yield and quality every variety of cereal grown to any large extent in England, its aim being to give definite information to the farmer, by means of leaflets or other means, on the germinative energy, variety and reproductive energy of the seeds purchased by him.

Factors involving "quality" and market valuation of barley were entrusted to The Institute of Brewing, and from 1935 up to the outbreak of war, nearly 200 samples were analysed and malted for the N.I.A.B. under the aegis of the Institute's Barley Valuation Committee. The malts were also analysed.

Reports on this work, which proved of great value to the N.I.A.B., were sent to that body each year, and arrangements were made in 1938 for the reports to be published simultaneously in the journals of both Institutes.

With the outbreak of war the ordinary variety trials carried out by the N.I.A.B. at sub-stations throughout the country were suspended until 1945*, the work of maintaining stocks of pure seed of proved varieties of all cereals taking first place.

The Institute of Brewing was elected a member of the N.I.A.B. in 1942.

* Owing, however, to the advanced stage of their development, it was found necessary to carry out trials with two of the more promising barleys bred at the Cambridge University Plant Breeding Institute.

A paper by Dr. Hunter on "The Improvement of Malting Barleys in Retrospect and Prospect" was published in the Journal of the Institute in 1943, which had also included in the previous year a memorandum on the objects of the N.I.A.B.

Field Trials at Rothamsted

Although the whole of the Institute's staff employed at Rothamsted Experimental Station had been transferred to the University of Birmingham, it was obvious that continuous collaboration between the Experimental Station and the Institute would be not only mutually beneficial, but almost indispensable. Arrangements, for instance, were made under which Rothamsted would, on request, supply the Institute with samples of barley grown, harvested and stored under definite and known conditions.

In furtherance of this collaboration, it was agreed that Rothamsted should convene an annual Conference—so long as the Institute and the Station deemed this advisable—at which barley growers and buyers could discuss technical and scientific questions concerned with the production of malting barleys. The first Conference, as has already been stated, was held in 1934. Conferences were held subsequently under the Chairmanship of the Earl of Stradbroke, K.C.M.G. (1935), Sir Merrick Burrell, C.B.E., President of the Royal Agricultural Society (1936), Mr. U. Roland Burke (1937) and the Earl of Radnor (1938). Between 235 and 300 samples of barley were submitted at each of these Conferences, an account of the proceedings being published annually in the Journal of the Institute.

With successive Conferences, it became apparent that the standard of the barleys exhibited was steadily rising. Their value, therefore, as a means of contrasting the agricultural features which produce either good and bad barleys was correspondingly reduced each year. A new plan was accordingly put into operation in 1938 when farmers were asked to send in two samples, to represent their best and worst samples of the year, and to state what was, in their opinion, the cause of the difference in quality between the two. In addition, farmers were asked to give information on a number of factors which might affect the quality of the crop.

The outbreak of the war in 1939 interrupted this series of Conferences.

Some 1,200 barley samples in all were examined and valued by the Institute's Barley Valuations Committee in connection with the five Malting Barley Conferences held between 1934 and 1938. The results were recorded by Mr. H. V. Garner and Mr. J. W. Weil in a paper, "Cultivation of Malting Barley in England", published in 1940

in the *Empire Journal of Experimental Agriculture*. A report, by Dr. E. M. Crowther and Mr. J. W. Weil, on the analysis of the barleys valued for the Conferences of 1935, 1936 and 1937 was published in 1939 in the Journal of the Institute.

The mutual sense of appreciation of the value of this co-operation between the two bodies, both to the farmer and agricultural expert and to the maltster and brewer, has frequently been given expression; and in 1943, which year marked the centenary of the Rothamsted Experimental Station, a resolution was passed by the Council of the Institute in which that body particularly expressed its appreciation of the eminent services rendered by Sir John Russell to the brewing industry. In this year Sir John retired from his position of Director of the Station.

The Harvesting and Drying of Barley

In 1936 experiments were begun on a farm in Essex, under the auspices of the Rothamsted Experimental Station and the Institute, to attempt to determine the difference, if any, between barley harvested in the ordinary way and that harvested by means of a combine-harvester and drier.

Arrangements to continue this line of investigation were cancelled owing to the war.

In the meantime, the Brewers' Society, at the Institute's suggestion, had become a party to an agreement made in 1934 between the National Farmers' Union, the National Association of Corn and Agricultural Merchants and the Maltsters' Association. Under this agreement a seller of barley which had been artificially dried must declare that fact at the time of sale, and confirm such declaration in writing to the buyer before the sale is completed.

Farm Grain Drying

The question of grain drying assumed prominence again in 1944 when Dr. L. R. Bishop and Mr. H. M. Lancaster were appointed to serve on a Scientific Advisory Committee set up by the Ministry of Agriculture and Fisheries to consider questions relating to the handling, transport, drying and storage of grain cut by combine-harvester. Other bodies represented on the Committee were the National Institute of Agricultural Engineering, the Milling Research Station, the Farm Crop Driers' Association and the Department of Industrial and Scientific Research.

Mechanical and germination tests were carried out in various parts of the country and farm grain driers were inspected during the 1944 harvest. As a result, various improvements were suggested and an

article on the subject entitled "Grain Storage on the Farm", was published in the Ministry's Journal.

In the Spring of 1945, a special meeting of representatives of the Brewers' Society, the Maltsters' Association of Great Britain and The Institute of Brewing was convened by the Council of the Institute for a general discussion on the subject of farm grain drying in the hope that it would elicit some suggestions which would be of value to the Ministerial Committee in its deliberations.

At this meeting various recommendations intended to ease storage problems were agreed upon and were brought to the notice of the Ministry. Subsequently, representatives of the Brewers' Society and the Institute attended a number of Ministerial Conferences.

It was, for instance, agreed at the meeting that the provision of drying and storage capacity on the growers' premises or at railway stations could not generally be accepted by brewers and maltsters as a satisfactory alternative to drying and storage facilities on their own premises. The provision of such facilities on consumers' premises was, however, a long-term proposition owing to shortages in skilled labour and building materials and other factors. As a short-term policy, therefore, it was recommended that members of the Brewers' Society and Maltsters' Association should buy, handle, dry and store at least 25 per cent of their total season's requirements of barley for malting during the first six weeks after the beginning of the harvest. This, it was agreed, could be done if all malt kilns, as well as barley kilns and other driers, were kept in continuous daily use for barley drying until the "combined" rush was over.

Malt storage problems were not anticipated, since at harvest time at least 75 per cent of a maltster's storage capacity would be available, under the present demand, to take the combined barley as it came off the malt kilns. If the barley thus stored were steeped as soon as it would germinate properly, the malt storage would be liberated as the new malt came off the kilns. The malting labour could be used to take in the barley and dry it on the malt kilns and store it away until the maltster began to steep again.

To make this programme possible brewers were encouraged to continue their practice of only buying sufficient malt to last them until the end of the year current, a practice which considerably simplifies the malt storage problem.

Papers by Dr. L. R. Bishop on various aspects of grain harvesting, drying and malting were published in 1944 and 1945 in the Institute's Journal.

Pest Infestation

During the three years 1939, 1940 and 1941 the Institute made an annual contribution of £80 towards the sum of £1,000 per annum which was made available jointly during these years by the railways and the grain, milling, tobacco and brewing and malting interests to finance an investigation into the pest infestation of stored produce. The organisation carrying out this work was the Department of Scientific and Industrial Research and a "Standing Conference" of representatives of the interests concerned kept the various organisations informed of the progress of the investigation.

A large amount of the work in connection with suggested remedial measures was carried out in the Institute's laboratories, while the Institute's experimental hop kilns, with the permission of Whitbread & Co. Ltd., were lent to the Department for experiments in other directions.

Two pamphlets were issued by the Department in 1940, one dealing with fumigation of insect pests, the other being a report of a survey of the infestation of grain by insects.

A scheme of research and technical surveys bearing on the problem of protection of stored products, and particularly foodstuffs from rodents was inaugurated at the outbreak of war at the Bureau of Animal Population at the University of Oxford. This was developed on a considerable scale with the co-operation of the Agricultural Research Council, and a Standing Conference on Rodent Infestation was appointed in 1940 to provide a link between the research workers and the organisations represented on the Conference. Among the latter were The Institute of Brewing, which was represented by Mr. H. M. Lancaster, and the Maltsters' Association, represented by Mr. Robert V. Reid.

Indian Barleys

Samples of barleys grown in India were received for valuation by the Institute from various Indian provincial governments during the years preceding the war. Reports were made to the Trade Commissioner, India House, for despatch to the authorities concerned and a number of these, with the consent of the Imperial Council of Agricultural Research, were published in the Journal of the Institute.

Brewers' Grains as Pig Food

Investigations were carried out during this period of the Institute's history to ascertain whether brewers' grains, either dry or wet, could suitably be utilised as a food for growing pigs.

Preliminary trials with dried grains, carried out, under a grant from the Institute, at the Pig Husbandry Research Station, Wye College, gave such promising results that the experiments were extended in 1936. The results showed that millers' offals, the material generally used in pig feeding in conjunction with barley meal or maize meal, could safely be replaced by 10 per cent of brewers' dried grains.

Experiments with fresh grains, as a constituent of the ration of growing and fattening pigs, were carried out by Mr. V. C. Fishwick at Wye College in 1939, and also gave good results with the following mixtures :—

(1) Eight parts by weight cereal meals, one part dried grains, one part protein feed.

(2) Eight parts by weight cereal meals and one part protein feed. (Before feeding, two parts of this meal mixture were mixed with one part by weight of fresh grains.)

1½ lb. of chalk and ½ lb. of salt were added to each 100 lb. of mixed meal in each of the above mixtures.

The results were of special interest at the time as grains were used as a substitute for millers' offals, the latter being difficult to obtain in some districts under war conditions.

Reprints of the reports on this and the earlier investigation were widely circulated by leading grain merchants among their clients.

BEER PIPES

Another subject into which the Institute enquired was the suitability of various materials for beer pipes. This investigation was carried out in 1935 at the request of the Brewers' Society. Much valuable information, based on practical experience and scientific investigation, was obtained, partly as a result of a questionnaire addressed to some seventy-five of the larger breweries in the United Kingdom, and was communicated to all the members of the Society.

BREWERY EFFLUENTS

A few years later, again at the instance of the Brewers' Society, the Institute interested itself in the problem of brewery effluents. In pursuance of the Public Health (Drainage of Trade Premises) Act, 1937, a certain Urban District Council drafted bye-laws which sought, among other things, to limit the amount of suspended solids in trade effluents carried into public sewers to twenty grains per gallon, and to prohibit altogether the presence of yeast and sugar.

These bye-laws were opposed by the Federation of British Industries

and by the Brewers' Society, and the latter organisation asked the Institute to determine reasonable standards for brewery effluents. A small Committee was accordingly appointed by the Research Fund Committee to consider the question and its report was published in the *Journal of the Institute* in 1939. This report was of considerable assistance to provincial breweries in their negotiations with local authorities.

HOPS

During the period 1935-45, The Institute of Brewing, through its Research Fund Committee, contributed some £3,000 towards the maintenance of the work on hops at Wye College; and annual reports by Professor Salmon on the trials of new varieties of hops raised in the College hop-nursery appeared in the *Journal* during these years, as well as a number of original contributions by him on hop growing. Conferences on hop growing were held at Wye in 1936 and 1939.

In 1944, at the request of the Institute, the Brewers' Society issued a circular to its members encouraging them to take up five new varieties of hops as part of their normal supply of English hops. This circular met with an excellent response.

A further encouragement to the growth of new varieties of hops was the institution in 1944 by Barclay Perkins & Co. Ltd., Arthur Guinness, Son & Co. Ltd., and Whitbread & Co. Ltd., jointly, of an annual challenge cup to be awarded for the best growth of the year of a new Wye variety. Each new variety submitted was required to be grown as a substitute either for English commercial varieties or for American hops. The rules governing the award also specified that most points should be given for resin content, which would be determined by The Institute of Brewing by chemical analysis.

Cultural Investigations

Since 1914 the East Malling Fruit and Hop Research Station* had been the main testing ground for the best of the new varieties raised by Professor Salmon at Wye College. Side by side with this work, the Station had developed its own programme of hop research, such as the testing of many of the traditional cultural practices in order to elucidate the general principles upon which they are based. A report

* Owing to the increasing activities at East Malling, the approval of the Ministry of Agriculture and Fisheries was obtained in 1935 to a revision of the Station's articles of association to allow for a wider representation of scientific and practical bodies in its management. Under the revised articles the Council of the Institute and its Research Fund Committee are each entitled to nominate a representative for election to the Governing Body of the Station. The Executive Committee, which is, in turn, elected by the Governing Body includes one of these two nominees, while the Institute is also represented on the Hop Research Committee of the Station.

on this work, by Dr. R. G. Hatton and Mr. F. H. Beard, was published in the Institute's Journal in 1939.

For a sufficient test of their cultural value, seedlings sent to East Malling were retained in cultivation for some five years, and in 1939 arrangements were made by the Institute to submit in each year up to fifteen selected samples to analysis and brewing trials so that the work of weeding out the least desirable or worthless varieties might be helped forward.

A memorandum, prepared by Professor E. G. Salmon, Dr. R. G. Hatton and Mr. F. H. Beard, on the merits of five new varieties of hops for which there was an increasing demand by growers, was published in the Journal of the Institute and in that of the Ministry of Agriculture in 1943. These varieties, which were mentioned in the circular issued by the Brewers' Society in 1944, were "Brewer's Gold", "Bullion Hop", "Brewer's Favourite", "Quality Hop", and "Fill-pocket".

A valuable symposium by Dr. Hatton and his colleagues on "The Problems and Practice of Hop Growing" was prepared for the Institute in 1943. Reprints of this article were sent by the Hops Marketing Board to all growers.

There also may be mentioned a further report by Professor Salmon on three mid-season hops which was published in the Journal the same year. The varieties dealt with were "Brewer's Stand-by", "Malling Mid-Season" and "College Cluster".

Chemical and Biochemical Investigations

In 1935 the Institute's Journal contained a memorandum by Dr. T. K. Walker on the investigations into the preservative principles of hops carried out at the College of Technology, Manchester, during the preceding twelve years, together with a summary of the results obtained.

Subsequent research was mainly concerned with the problem of ascertaining the nature and extent of the changes undergone by several antiseptic constituents of hops during the processes of brewing; with the study of hop constituents in relation to flavour; and with questions relating to beer stability. Reports on this work, both by Dr. Walker himself and by Dr. Walker jointly with his colleagues, Dr. J. J. H. Hastings, Dr. A. Parker and Mr. E. Vero, appeared in the Journal between 1935 and 1941.

The last of these reports brought to a conclusion the work on the preservative principles of hops. In it Dr. Walker reviewed the whole of its progress and summed up the principal conclusions reached.

Help was also given, during the war years, to the hop work at Wye

College in the analysis of some hundreds of samples of new varieties of hops raised there and grown on at East Malling.

Hop-drying Investigations

The valuable work on hop drying carried out since 1920 in the Institute's kilns* at Beltring, Kent, by Dr. A. H. Burgess was brought to a conclusion in 1939 and a summary of the results was published in the Journal in the following year.

In the course of his investigations Dr. Burgess put forward the suggestion that the lower the temperature of drying, the higher would be the market value of the hops. To test this statement, a series of brewing trials was carried out during 1935 and 1936 under the aegis of the Research Fund Committee. Five brewery firms, Wm. Butler & Co. Ltd., Charrington & Co. Ltd., J. W. Green & Co. Ltd., Truman, Hanbury, Buxton & Co. Ltd., and Wm. Younger & Co. Ltd. co-operated with the Institute in these trials, a report on which by Mr. A. J. C. Cosbie appeared in the Journal in 1937.

The final conclusions drawn from the experiments by Mr. Cosbie were three in number:—

“(1) The *market value* of hops, as judged by ‘appearance’, ‘rub’ and ‘aroma’, is influenced by the temperature at which they are dried, and the *lower* that temperature the higher is the market value.

“(2) The *brewing value* of hops, as judged by the flavour of beer, is dependent on the temperature of drying, and hops dried at a *medium* temperature are preferred by all those who have conducted brewing trials.

“(3) The *preservative value* of hops, as measured by the estimation of resins, depends on the temperature of drying, and the *lower* that temperature the higher will be the preservative value.”

Drying by Open Flame Oil Burners

Open flame oil burners for the drying of hops were introduced in 1933 and spread with some rapidity among growers. By 1935 the quantity of hops dried by this method was such that the Brewers' Society felt it advisable to investigate the matter to ascertain whether drying with open flame oil burners had any ultimate detrimental effect on the hops. Consequently, early in 1936, the Institute, at the Society's request, appointed a Special Committee to consider the question.

* These kilns were requisitioned by the Army at the end of 1939 for use as an office and in 1942 the Department of Scientific and Industrial Research (Food Investigation Department) took them over for a limited period. In the latter year the lease granted by Whitbread & Co. Ltd., to the Institute expired, but it was extended for a further seven years.

During the next two years a series of experiments was carried out at the Institute's experimental oast by Dr. Burgess and at the Research Laboratories at Birmingham, where Professor R. H. Hopkins and Mr. W. A. Whitley conducted brewing trials. As a result, a report was made to the Brewers' Society to the effect that it would be unwise for the Institute to recommend that hops can safely be dried by means of open flame oil burners.

Investigations in Connection with Stored Hops

Trials were also carried out about the same time in connection with the deterioration of stored hops. These arose out of a paper read by Dr. Burgess before the London Section of the Institute in the autumn of 1935, in which the author suggested the possibility that the deterioration might be due to the activity of living organisms rather than enzymes.

The experiments were carried out under the direction of Mr. C. G. Tosswill (Messrs. Wigan, Richardson & Co.) and Mr. A. G. Aldous, and a report on the work by Mr. A. G. Aldous, Dr. A. Parker, Mr. C. G. Tosswill and Dr. T. K. Walker was published in the Institute's Journal in 1938.

Contemporaneously with this work went investigations on the mycological side, which were conducted, under a grant from the Institute, at the London School of Hygiene and Tropical Medicine. A report on this work, entitled "Mould fungi as a possible cause of deterioration of stored hops", by Dr. A. H. Burgess and Mr. G. Smith, appeared in the Journal in 1941.

A report on the second and third series of trials on the compression of hops in storage was published in 1938. The authors were Mr. A. G. Aldous, Dr. A. Parker, Mr. C. G. Tosswill and Dr. T. K. Walker and their consensus of opinion was that, generally, non-compressed cold-stored pockets showed better results than compressed cold-stored pockets, and that there was little to choose between non-compressed and compressed pockets in the ordinary warehouse. While compression of hops kept in warehouses was certainly advantageous for the first six, or possibly nine months, there appeared to be no advantage in it for longer periods, unless the question of space was vitally important.

Research on Hop Diseases

Intensive investigations into the increasing menace of various hop diseases, particularly *Verticillium* wilt and virus diseases, financially supported by the Ministry of Agriculture, the Brewers' Society, the Hops Marketing Board and The Institute of Brewing, were accelerated

in 1942, under the aegis of the Ministry, at various centres. These included those at East Malling, Wye College and the Long Ashton Research Institute, Bristol.

VITAMINS IN BEER

A grant of £500 was made by the Research Fund Committee in 1943 to the School of Malting and Brewing of the University of Birmingham in aid of some researches on vitamins in beer which had been started by Professor R. H. Hopkins. A further grant of £1,000 was subsequently made.

Accounts of this work on vitamin B₁ and riboflavin in brewing, by Professor Hopkins himself and by Professor Hopkins and Dr. S. Wiener, appeared in the Journal of the Institute in 1943 and in 1944 and 1945. A further paper on the same subject emanating from the laboratories of Arthur Guinness, Son & Co. Ltd., also appeared in the Journal in the last-named year.

YEAST

A Conference, at which the Institute was represented by Mr. B. M. Brown, was held in November, 1939, under the auspices of the Agricultural Research Council, for the purpose of considering the question of the use of yeast in the production of a protein-rich food for cattle. Various possible sources of yeast were considered, such as molasses, potatoes, bracken and straw, and part of the experimental work was carried on at the Chemical Research Laboratories of the Department of Scientific and Industrial Research and part at the Universities of Oxford, Cambridge and Reading.

Following on this Conference, The Institute of Brewing was asked how far it could assist in this research and it was eventually decided that the work at Birmingham should include the analysis of fodder and other yeasts (grown on different worts) for amino-acid content and certain mineral matters, such as calcium, phosphate, nitrogen, iron, etc. Dried fodder yeasts, such as were being tested dietetically on cattle and pigs, were sent to the Institute's laboratories for that purpose by Professor H. D. Kay of the National Institute for Research in Dairying at Reading. There was further collaboration between the Institute and Dr. T. F. Macrae, of the Lister Institute of Preventive Medicine, who was concerned with yeast-feeding experiments on pigs at Cambridge.

Valuable results were obtained early in this research by the admixture of 5 per cent dried yeast to certain cereal diets.

Researches into the use of yeast as a feed for cattle and pigs were continued during the war years.

PART V

THE PROSPECT AHEAD

1946-1951

During this period of the Institute's activities a long-planned objective was attained—the establishment of an independent central research station. With this achievement, this record of the Institute's early years comes not to an end, but to a momentary pause, for the conclusion of the Institute's history is not in sight.

HORACE BROWN MEDAL

The award of the Horace Brown Medal in 1946 was made to Mr. Julian L. Baker, F.C.G.I., F.R.I.C., and the subject he chose for the lecture that is customarily delivered by the recipient was "British Brewing in Retrospect and Prospect". In making the presentation, the President of the Institute, Mr. M. V. Courage, paid a tribute to Mr. Baker's long and most valuable services to the Institute and to the brewing industry in general.

The next award of the Medal fell about the time of the Congress of the European Brewery Convention which was held at Brighton in 1951. The Council, therefore, decided that it would be appropriate to present the Medal to a distinguished foreign scientist, and Dr. Harry Lundin, the Vice-President of the Convention, was unanimously selected for the honour. After the presentation, which took place in London at a Special General Meeting in March, 1951, Professor Lundin delivered a lecture entitled, "Horace Brown's researches in brewing and some recent Swedish investigations in the same field".

MEMBERSHIP

Ordinary Membership

As has already been recounted, certain alterations to the Institute's Rules and Regulations and Bye-Laws were agreed upon in 1945. In particular, Rule 9 had been re-drafted with the result that the scope of eligibility of applicants for ordinary membership had been considerably widened. The resulting influx of new members began after a time to cause some concern, and it was suggested in 1948 by the Midland Counties' Section that the Rule might be reconsidered. Otherwise it was felt that the Institute was in danger of losing the original purpose for which it was founded.

It was found, however, that in the three-and-a-half years since the alteration to Rule 9, only 28 out of the 306 new ordinary members

elected during that period would not have come within one of the categories laid down by the "old" Rule.

The revision of the Rule was considered during the next two years by Special Committees appointed by the Council, who had before them suggested amendments proposed by several of the Sections. It was, however, agreed that these amendments gave rise to difficulties not less real than those alleged to exist under the existing Rule. The Committee recommended, therefore, the retention of Rule 9 as it stood, but informed the Council at the same time that a strong minority of members favoured a return to the old Rule. The Committee also expressed the view that many of the difficulties experienced by the Committees of the Sections were due, in a large measure, to the different interpretations placed on the meaning and intention of the Rule. It was accordingly suggested that a memorandum should be issued to give some guidance to the Sections.*

Student Membership

In 1948, arising out of a recommendation of the Post-War Education Committee, who felt that it would be to the advantage of all students of the profession of brewing if they were to register as student members of the Institute at the beginning of their training, it was decided to amend Rule 11. The original Rule read :

"Student members shall be persons engaged in the study of the principles and practice of the fermentation industries who have not attained the age of 21 years, and who are elected as such."

The words "who have not attained the age of 21 years" were now deleted and a sentence added to the effect that student members' election should be carried out in accordance with the Institute's Bye-Laws. At the same time the Bye-Laws were amended to empower the Council to make regulations for the election of student members.

The effect of these alterations was to require candidates for student membership to be not less than sixteen years old and to have passed an approved preliminary examination. They also had to show that they were recommended for registration as student members either by a teacher of chemistry in any University or other institution in which they were studying for the Institute's examinations or by a diploma member or other member of the Institute under whom they might be working.† Finally, candidates had to produce evidence that they were

* These recommendations were adopted by the Council at a meeting held in February, 1952.

† Under the Regulations, the Council required from the diploma or other member an assurance that the student would have facilities for obtaining satisfactory experience in general laboratory work in all the subjects of the first and second associate membership examinations.

undergoing a course of preparation and training approved by the Council, with the object of qualifying for the associate membership of the Institute. If, at the expiration of four years from the date of his registration, the student was not accepted as a candidate for the associate membership examination, his name was to be removed from the register. In computing the four years allowance was to be made for the period covered by national service. Provision was also made for re-registration at the Council's discretion.

EX-SERVICEMEN

Towards the end of the war the Secretary of the Institute interviewed a large number of men in His Majesty's Forces who wished to make brewing their career. Some of these men were placed with breweries where there were vacancies; there was a danger, however, that the supply of prospective brewers might greatly exceed the demand. In order to clarify the position, some 450 breweries were asked in 1946 to estimate the number of vacancies for junior brewers during the succeeding five years and to state the number of prospective brewers actually in training.

The information received as a result of these enquiries prompted the Institute to convey to the Ministry of Labour and National Service its view that, while encouragement should be given to ex-servicemen with exceptional qualifications, others should be dissuaded from attempting to enter the brewing profession. The Ministry accordingly included a paragraph in its careers pamphlet dealing with the brewing trade to the effect that the opening for new entrants to the profession of brewing would be limited for some time to come.

Two years later this paragraph was amended at the Institute's request and candidates were advised to get into touch with the Secretary of the Institute before embarking on a course of training.

THE SECTIONS

During this period of the Institute's history arrangements were made to hold a number of meetings jointly with appropriate Sections of the Incorporated Brewers' Guild. This step ensured larger audiences and added greatly to the success of the occasions.

FUEL ECONOMY

The national need for economy in fuel by all classes of the community increased as the war drew to a close and, after the cessation of hostilities in 1945, a special panel was set up by the Ministry of Fuel and Power for the purpose of planning means whereby further economies could be achieved in the brewing industry.

The Ministry took the view that, while many brewers had been able to make considerable reductions in their fuel consumption and were planning additional economies, there remained a number, particularly among the smaller breweries, who were unable to achieve any more worthwhile savings without further assistance. The fact that such breweries had no engineering staff or special technical knowledge hampered their efforts.

The Ministry decided, therefore, that a memorandum, in addition to that prepared by the Institute in 1918 and reprinted and re-issued in 1942, should be drafted for the benefit of all brewers, pointing out where alterations could be made to recover heat and quoting specific instances of successful fuel-saving.

In due course, the panel prepared a leaflet, "Beer and Coal", and copies were circulated by the Institute, at the Ministry's request, to all brewers, with a covering letter signed by the Chairman of the Ministry's Fuel Efficiency Committee. This letter mentioned the commendable reductions in the use of fuel and power achieved by many breweries, but pointed out that there was still a considerable variation between different breweries in fuel consumption per barrel brewed. It suggested that further restrictions in fuel could be made by a rational integration of the various processes involved in the brewing of beer.

The leaflet was discussed at a Conference on "Fuel and the Future" which was held under the auspices of the Ministry in October, 1946. It also came up for discussion at special meetings of the Sections of the Institute.

Local Fuel Efficiency Committees

The Fuel Economy Committee of the Institute, under the Chairmanship of Sir Hugh Beaver (Arthur Guinness, Son & Co. Ltd.), who had been elected to that position in 1947, was active throughout the seven years after the war when the question of the wise use of fuel remained a paramount problem.

In 1947, too, each of the Sections appointed local Fuel Efficiency Committees to act in consultation with the main Fuel Economy Committee.

Memorandum on Fuel Economy

At the beginning of the same year, the Institute re-issued its "Memorandum on Fuel Economy" to all breweries, with an invitation to them to forward to headquarters any suggestions they might have for its improvement. Many valuable suggestions were received as the result of this appeal both from the breweries and the local Fuel Efficiency Committees.

It was, however, decided to postpone a further re-issue of the memorandum pending the time when it should once more become possible to purchase coal on a definite specification and to obtain immediate delivery of plant and equipment. The suggestion was also made that the compilation of a treatise on the proper utilisation of fuel in the brewing industry, for long-term application, would serve a useful purpose.

In the meantime, a brief memorandum urging the adoption of certain measures to secure economy in fuel was prepared by the Chairman of the Fuel Economy Committee, and issued in 1948 to all breweries.

In 1948, too, consultations on fuel economy took place between the Brewers' Society and the Institute as a result of which a division of responsibility was agreed: the Institute was to deal only with matters of research, while the Society undertook responsibility for those aspects of fuel economy that were not primarily matters of research, such as, for example, the practical application of the results of research, and the question of propaganda.

ANALYSIS

Chairmanship of the Analysis Committee

The resignation of Mr. H. W. Harman from the Chairmanship of the Analysis Committee was received by the Council in 1950 with great regret. Mr. Harman had occupied this office for a period of over eighteen years and the Council's thanks for his invaluable services during this time were conveyed to him. He was succeeded in the chairmanship of the Committee by Mr. Harold Heron.

The Place of the Analysis Committee

During the period, the Analysis Committee considered whether its work should in future be a function of the proposed central research organisation or whether it should continue to function as a Standing Committee of The Institute of Brewing.

The Committee agreed, and the Council concurred in the suggestion that, while the research foundation should devote the major part of its energies to certain main lines of more or less fundamental research, it would need the help and advice of a body of men, such as those constituting the Analysis Committee, who were in close touch with industry.

Malt Analysis

The standard methods of analysis for malt, which had been originally published by the authority of the Council of the Institute in 1906 and

1910 and revised by the Analysis Committee in 1922 and 1933, were again issued in a revised form in 1948.

The Analysis Committee was of the opinion that chemists throughout the country would value the opportunity of checking their technique against an "official" analysis. With this end in view, it was decided to maintain a stock of "standard samples", which should be made available to members, with a certificate of analysis, at a fee to cover the expenses incurred.

Accordingly, 100 samples of a pale ale malt, screened and thoroughly mixed, were made up by H. A. & D. Taylor, Ltd., Sawbridgeworth. Each member of the Committee was invited to analyse a sample in duplicate. Seventeen members responded to this invitation and, from the results which were examined statistically, a "standard analysis" of the sample was evolved, with permissible limits of error.

A considerable number of samples of this "Standard Malt" was, in due course, forwarded to analysts wishing to check their routine methods against the Committee's certificate of analysis. Analysts making this check were invited to carry out their analyses in duplicate and to send both sets of figures to the Institute so that it could be judged whether details of the "Standard Methods" were due for revision.

Tentative rules for the analysis of malt, drafted by the Analysis Committee of the European Brewery Convention for consideration by the different countries represented in the Convention, were also discussed by the Committee.

Food Standards

Early in 1948 the Ministry of Food appointed a Food Standards Committee to review the composition of foods and recommend standards based on quality and nutritional value. At the outset, this Committee was faced with the problem of the metallic contamination of foods and a Sub-committee with specialised knowledge was accordingly set up to consider this matter, and to investigate the possibilities of prescribing limits of contamination.

Equally with others, the brewing industry was invited to assist the Sub-committee in this enquiry, with particular reference in the first place to certain specific metals such as copper, tin, lead and zinc.

The Institute and the Brewers' Society co-operated in this investigation.

General Analytical Methods

In 1950 the Institute's Analysis Committee appointed a Sub-committee whose duty it was to explore analytical methods likely to be

of value to the brewing industry and to examine the question of methods for the estimation of lead.

As a preliminary, the Sub-committee approached the Lead Panel Committee of the Society of Public Analysts.

Two methods for the estimation of lead were considered, a "quick method" and one to which analysts might have recourse when in doubt. A large number of experiments under both headings were carried out by the individual members of the Sub-committee. The final recommendations, which were in due course accepted by the Council and referred to the Brewers' Society, suggested two quick methods, one not requiring a centrifuge, the other a phosphate entrainment method. A reference method, for use when the results obtained by either of the quick methods were in doubt, was also put forward.

EXAMINATIONS

A Special Committee was appointed by the Examinations Committee at the end of 1945 to consider the question of revising the examination regulations and syllabus. It will be remembered that, since 1931, Part I of the examinations had been divided into two Sections, "(a)" and "(b)" which could be taken by candidates separately or together.

The Committee recommended that these two sections should in future form separate and distinct examinations and that they should be known as the "First Associateship Examination" and "Second Associateship Examination". It was suggested that the First Associateship Examination should consist of questions in inorganic and physical chemistry, organic chemistry and physics; while the second examination should include questions on plant biology and plant biochemistry and further questions on organic chemistry. Candidates for both examinations should be required to furnish evidence, by the production of certified notebooks or otherwise*, that they had received an adequate training in practical laboratory work covering the subjects of the examinations.

A further recommendation was that no candidate should present himself for the Second Associateship Examination, unless with the previous consent of the Examinations Committee, until he had passed the first examination. It was also suggested that the second examination should be so framed as to test particularly the candidate's knowledge of the principles underlying the practice of malting and brewing.

* In 1949 the regulation on notebooks was amended and students of a university or college were asked to produce a certificate in a required form (although the examiners were empowered to ask for students' notebooks at their discretion). Other students still had to furnish notebooks.

Another suggestion was that certain examinations should be accepted in lieu of the two Associateship Examinations. These were an approved degree in science (with chemistry or biochemistry as a main subject); the degree of B.Sc.(Birmingham) in industrial fermentation; the degree of B.Sc. Tech.(Manchester) in the chemical technology of fermentation processes, including brewing; and the Diplomas in malting and brewing of the University of Birmingham and of the Heriot-Watt College, Edinburgh.

These recommendations were approved by the Council in 1946, together with a further suggestion that the term "Diploma Membership Examination" should be substituted for the term "Part II" previously in use.

The syllabuses covering the various subjects of the examinations were also revised and a list of suitable text-books was prepared to help candidates in their studies.

The revisions came into force on January 1st, 1948.

In the following year the question of further revision came up for consideration owing to the decision of the Ministry of Education to issue "General Certificates of Education" as part of a scheme to revise the School Certificate examinations. This necessitated certain alterations in the examinations scheme.

At the same time, the opportunity was taken to re-arrange the syllabus for the two Associateship Examinations, certain portions of the syllabus being transferred from the First to the Second Associateship Examination. The second examination now covered questions on plant biology, general biochemistry (instead of a second paper on organic chemistry) and biochemistry as applied to malting and brewing.

The syllabus is now arranged to provide the student with an opportunity of studying first the more fundamental and academic aspects of chemistry and physics before proceeding to the study of the application of botany and biochemistry to brewing. Under this arrangement it should be possible for students, even though living at a distance from the recognised brewing schools, to study for the subjects of the First Associateship Examination at local technical colleges or, in some cases, at their schools.*

* In 1951 the Examinations Committee considered a suggestion whether it might not be of advantage to substitute for the two Associateship Examinations the degree of B.Sc. in chemistry, physics and mathematics. The Committee recommended that the existing framework of the examinations scheme should not be altered. It was, however, decided that candidates failing in two out of three subjects in either examination should be required to take all three subjects again; that, except in very special cases, no candidate should be allowed to make more than three attempts at any one examination; and that no candidate could sit for the second examination until he had passed in all the subjects of the first examination.

Diploma Membership Examination

It was agreed that no candidate should be admitted to the Diploma Membership Examination unless or until he could produce evidence that he had completed three months' practical training in malting, including one month's continuous working.

The revisions outlined above were scheduled to come into force on January 1st, 1953.

EDUCATION

"Brewing as a Profession" Leaflet

The Post-War Education Committee was re-elected in 1947 with a slightly smaller membership. One of its first recommendations, which was accepted by the Council in that year, had the effect of making some minor alterations in the text of the Institute's leaflet, "Brewing as a Profession".

Collaboration with Other Bodies

In the post-war years, in spite of some disappointments, developments in the facilities for the training of student brewers can be recorded in a number of directions.

The transfer in 1951 of the Institute's research staff from their quarters in the University of Birmingham to Lyttel Hall, for instance, meant that increased accommodation was available for brewing students. As a result of the co-operation of local brewers, all the brewing students entering upon their final year at the University had a period of practical brewing during the summer vacation.

At Cambridge the "adoption" of the Institute by St. Catharine's College in 1950 was an interesting event which came about largely through the efforts of Dr. Herbert Hunter, an honorary member of the Institute. This gesture by the College was in keeping with the University's wish to be brought into close touch with other activities of national life and the liaison promises to be of increasing benefit both to the College and to the Institute. The more immediate advantage to the latter was that the College offered it a home in Cambridge for meetings and similar functions.

In 1949 a series of lectures was inaugurated at Burton-on-Trent College. These lectures, which were on brewing subjects and were given chiefly by members of the Institute, were designed in the first place to help candidates for the Institute's diploma membership examination. They were continued in 1950 and 1951.

A somewhat similar course of special lectures, with the same object in view, was held in Scotland in 1951 under the auspices of the

Heriot-Watt College, the Brewers' Association of Scotland and the Scottish Sections of the Institute and the Incorporated Brewers' Guild.

A Chair of Brewing and Industrial Fermentation had been established at the Heriot-Watt College in the previous year, Professor I. A. Preece, D.Sc., Ph.D., F.R.I.C., F.R.S.E., being the first occupant. The appointment of a permanent advisory Committee to the College on the training of technical brewers in Scotland was further evidence that the importance of training was kept in the forefront of the Scottish Section's deliberations.

Fellowships were established by the College in 1951 for the express purpose of encouraging original work in those branches of study, including brewing, which were covered in the recognised courses of training for the associateship of the Heriot-Watt College. To mark the introduction of this scheme, Honorary Fellowships were awarded to a few distinguished former students. The list included Mr. J. Morison Inches, a Vice-President of the Institute and a Governor of the College.

In the South, the Sir John Cass Technical Institute arranged a series of lectures during 1950 and 1951 on various aspects of the brewing industry, some of the lectures being designed especially for candidates working for the diploma membership examination. Notice of the arrangements was sent to all breweries within a sixty-mile radius of London. Attempts were also made, in collaboration with the Institute's Examinations Committee, to provide facilities for the training of candidates for the Second Associateship Examination. It proved, however, impossible to get together a sufficient number of candidates to justify any special arrangements.

A similarly disappointing result for a like reason attended the efforts of the Yorkshire and North-Eastern Section of the Institute to find a University or technical college in the district at which courses covering the syllabus of the Institute's examinations could be arranged. It was ascertained that Leeds Technical College had facilities for the training of intending brewers up to associate membership standard, but candidates were not forthcoming in sufficient numbers to justify special classes for the associate membership examinations.

In 1951 a series of lectures on various aspects of brewing and allied subjects was held under the auspices of the Manchester College of Technology, at the instigation of the North of England Section of the Institute.

Scholarships and Awards

In 1951 scholarships open to intending entrants to the brewing industry included the four annual Scholarships at Birmingham

University which have already been mentioned in this History. There was also an annual scholarship tenable at Edinburgh University, of the value of £150 per annum for four years. These scholarships were primarily intended to be taken up when the candidates were leaving school. In addition, an annual scholarship might be awarded tenable at the Heriot-Watt College at Edinburgh; this was open only to candidates who had undertaken the three-year diploma course and had completed their first year at the College. The scholarship, which was of the value of £150 per annum, was payable for two years.

The number of scholarships awarded annually during the period 1946 to 1951 varied but never reached the full maximum, and the question was raised in 1951 whether the schools were being made sufficiently aware of the existence of these six scholarships. It was felt, however, by the Council that, in view of the prevailing lack of vacancies for brewers, it would be inopportune to give much additional publicity to the scholarships.

The "Sir William Waters Butler" Award

In 1950, the bequest of £500, made by Sir William Waters Butler to provide some mark of encouragement for young brewers, became operative. After consideration by the General Purposes Committee, it was recommended that an annual award should be made to the best student of the year who had qualified for the Diploma in Malting and Brewing at the University of Birmingham. It was also suggested that the award should be decided each year by the President of the Institute in consultation with the Professor of Brewing at the University, discretion being left to them to withhold the award in any year should they think fit to do so. These recommendations were approved by the Council in 1951.

The John S. Ford Memorial Trust

The annual income from this Trust Fund amounted to about £130. During the period under review, three travelling awards to allow the recipients to visit Scandinavian breweries were made, as well as one to enable the chosen student to cover expenses in connection with the study of malting. In 1949 no award was made.

During the year 1951 much consideration was given by the Examinations Committee to the question whether, in the light of past experience, some emendations might not, with advantage, be made to the Trust Deed.* In their deliberations the Committee was helped by

* A Supplementary Deed had been executed in 1948 as a result of the change in nomenclature of the Institute's examinations. The Principal Deed had also been amended where necessary.

memoranda on the subject both from the Trustees and the Scottish Section. No further emendations were made to the Deed but the Committee, in due course, drafted two memoranda, one for its own guidance in making awards and one for the information of candidates. These were approved by the Council in November, 1951.

Honours in the Diploma Membership Examination

In 1950 the Council decided, on the recommendation of the Examinations Committee to make a change in the basis on which the award of "Honours" in the Diploma Membership Examination was made.*

CONTINENTAL STUDENTS OF BREWING

The fact that British students were being received in Denmark and Sweden as a result of the travelling awards granted under the John S. Ford Memorial Trust suggested that there might be some reciprocity and that arrangements might be made for continental students to visit British breweries. A Committee was appointed by the Council at the end of 1947 to consider this question and, in its report some months later, it showed itself strongly of the opinion that it would be advantageous to the brewing industry if every encouragement were given both to post-graduate students and to experienced brewers to visit breweries in the United Kingdom. A free interchange of brewing experience and thought between British and continental brewers should be the object of any scheme set on foot.

The Committee made a number of detailed suggestions to further the proposed interchange of visits and, as a result of its report, a "Hospitality" Committee was appointed in 1948 to consider not only the question of international collaboration in the exchange of brewing students, but also the matter of hospitality to distinguished visitors.

The Committee was of the opinion that there might be a joint Committee of the Institute and the Brewers' Society to deal with these questions. The Society, however, expressed the view that the matter might well be left in the hands of the Institute. At the same time, through its Annual Report for 1947-48, it asked its members to co-operate as the occasion arose.

A circular letter was issued to all breweries to ascertain how many would be able and willing to co-operate in offering hospitality to

* Candidates had had previously to obtain a minimum of 70 per cent of marks on the whole examination, with a minimum of 50 per cent in any one paper. Under the new arrangement candidates passed with "Honours" only if they obtained not less than 70 per cent of marks in the subjects of malting and brewing and not less than 50 per cent in any of the remaining subjects. The total average marks for the whole examination remained as before, 70 per cent.

foreign students. Some twenty firms signified their agreement with the scheme and arrangements were subsequently made for the "adoption" of several continental students by firms for limited periods of time.

EUROPEAN BREWERY CONVENTION

A previous move to foster international contacts in the technical fields of malting and brewing had been made in 1946. In May of that year, at a meeting of representatives from Belgium, France, the Netherlands, Scandinavia and Switzerland held in Paris, it was decided to form an international brewery institute. At a further meeting held in Paris in the following September, the proposed organisation was given the name of the "Continental Brewery Centre" and it was agreed that it should be, in effect, a society of technicians and scientists in malting and brewing.

Later in the year the Centre approached the Council of The Institute of Brewing with the expressed hope that that body would be able to collaborate with it in some way. The Council, in turn, arranged that the Secretary of the Centre, Dr. F. Mendlik, should be invited to attend a joint meeting of the London Section of the Institute and the London and South of England Section of the Incorporated Brewers' Guild. At this meeting, which was held in March, 1947, Dr. Mendlik gave an outline of the aims and objects of the Centre and conveyed an invitation from the Dutch brewing industry to the Institute to send a delegation to the First Congress later in the year.

The Congress was held at Scheveningen in June, 1947, and was attended by some 200 delegates, including 25 representatives of the brewing industry of Great Britain. Before it assembled, a meeting of a provisional Committee was held to discuss procedure and the proposed Constitution of the new organisation. Eight countries including Great Britain, whose representative was Mr. B. M. Brown, were represented on this Committee.

A report on the proceedings of the Congress was submitted to the Council of the Institute by Mr. Brown and it was decided that the Institute should join the European body and that Mr. Brown should be nominated to represent the Institute on the Council of the Centre. At the same time the suggestion was put forward and accepted that the name of "Continental Brewery Centre" should be altered to "European Brewery Convention".

In due course, with the agreement of the Brewers' Society, The Institute of Brewing became the accepted British representative on the E.B.C., and a second nominee, Mr. N. B. Smiley, represented it with Mr. Brown on the Council of that organisation. A suggested method

of calculation of the subscriptions of the member countries was accepted,* and the Institute put forward a recommendation for the financing of the Convention and of Congresses held under its auspices.†

The annual subscriptions payable by the Institute were, at the suggestion of the Brewers' Society, made a charge on the Institute's research funds.

A Committee was appointed by the E.B.C. in 1948 to report on the organisation of barley breeding and research in various countries. A further Committee was subsequently set up to consider the question of the standardisation of analytical methods. Dr. L. R. Bishop was appointed to represent Great Britain on this latter Committee and was later elected as its Chairman.

The Second Congress

The Second Congress of the E.B.C. was held in Lucerne in the summer of 1949 and was attended by 325 delegates from some fifteen countries. The two major subjects discussed were proteins in brewing and the production of sterile beer for sale by means other than pasteurisation. A paper on this Congress, containing an abstract of the communications made thereto, was read by Mr. B. M. Brown at a meeting of the Institute's London Section.

E.B.C. Council Meetings

In November, 1949, the Council of the E.B.C. met for the first time in London. The meeting took place at the offices of the Brewers' Society, when it was decided to hold the next Congress in Brighton. It was also decided that the special subjects to be considered at this Congress should be primary fermentation in the brewery, with particular attention to the flocculation of yeast, and aspects of the economic functioning of the brewery. This second heading covered losses of material in brewing and in racking and bottling and the introduction of mechanisation and new techniques in the brewery and bottling plant.

* Subscriptions were based on the approximate annual beer production of the participating countries. In 1951 the proportion was as follows:—

		%
Belgium, Gt. Britain, France, Germany	.. 14% each	56
Austria, Denmark, Sweden	.. .. 7% each	21
Italy, Netherlands, Switzerland	.. .. 5% each	15
Finland, Norway	.. .. 4% each	8
		<hr/> 100 <hr/>

† It was suggested that each individual attending a Congress should pay a small subscription which would be supplemented from a guaranteed fund to be raised from the national associations in the same proportion as their subscriptions.

Reports were received from the Analysis and Barley Committees and, on the recommendation of the latter, it was agreed that cultural trials of one well-known variety should be carried out in as many countries as possible, samples of each crop being submitted to malting and brewing trials as well as to analysis.

Prior to the Third Congress, which was held in Brighton in the summer of 1951, a meeting of the Council of the E.B.C. took place in the same town, when it was decided to hold the Fourth Congress in the South of France. (Nice was ultimately selected.) Further decisions named two priority subjects for discussion at the Fourth Congress—the relation between the analytical figures of the barley and the malt and the physico-chemical stability of the beer; and the control of spoilage organisms in beer. It was also agreed that, to facilitate the exchange of brewing students between different countries, each nation should be asked to propose a list of breweries willing to accept such students.

The Third Congress

The Third Congress of the Convention at Brighton was very successful and visitors to it numbered 548 from sixteen countries. Apart from the scientific meetings, there was a full programme of social events, beginning with a civic reception at the Royal Pavilion and culminating with a garden party at Lyttel Hall, Nutfield. On this latter occasion a plaque presented by the E.B.C., wishing prosperity to the Brewing Industry Research Foundation, was unveiled in the entrance hall of the main building by Madame Kreiss, wife of the President of the E.B.C.

THE CHEMICAL COUNCIL

Before the war the cost of the publication of new discoveries in chemical science was met by the subscriptions of the individual members of the organisations represented on the Chemical Council. After the war, however, there was a simultaneous increase in the amount of material for publication and in the costs of production. Indeed, it was estimated that publication costs in 1950 would exceed the income of the Council for that year by over £40,000. It was felt that industry generally should be asked to contribute towards the cost of these scientific publications and an appeal was accordingly issued by the Chemical Council. It met with a ready response. The Institute of Brewing, itself, decided to contribute a sum of £150 for 1950 and a similar amount in 1951, the question of further annual contributions to be considered thereafter.

A HISTORY OF THE INSTITUTE OF BREWING

THE CHEMICAL SOCIETY

The Chemical Society celebrated its centenary in July, 1947; and an appropriate address of congratulation was presented on behalf of the Institute.

THE JOURNAL

During the period under review some 175 original papers were published in the Journal of The Institute of Brewing.

Towards the end of 1946, on the recommendation of the Publications Committee, the Council appointed an Assistant Editor. The position was offered to Dr. I. A. Preece, D.Sc., F.R.I.C., F.R.S.E., who entered on his duties at the beginning of 1947. Two years later he succeeded to the position of Editor on the retirement of Mr. Julian L. Baker owing to ill-health. Mr. Baker had edited the Journal for a period of twenty-nine years and under his editorship, it attracted research contributions of great merit both from at home and abroad and achieved a high position among scientific journals.

Miss A. M. MacLeod, B.Sc., was appointed as Assistant to Dr. Preece in 1951.

A fourth volume of the Collective Index, covering the issues of the Journal for the decade from 1935 to 1945, was compiled by Mr. W. H. Bird and Miss P. M. Bell and published in 1947.

Synopses of Papers

In 1949 the Publications Committee adopted a recommendation of the Royal Society that every paper appearing in a scientific journal should be accompanied by a synopsis suitable for use as an abstract in appropriate periodicals. This synopsis would briefly convey the content of the paper and draw attention to its main conclusions and to any new information given in it. Accordingly, whenever possible, papers appearing in the Institute's Journal carry a synopsis on these lines.

Fair Copying Declaration

In the ordinary course of their work scientists frequently need for reference copies of papers appearing in technical and scientific periodicals not readily available to them. Up to 1948 the majority of libraries had not granted facilities for copying in view of the uncertainty of their position, should they do so, under the Copyright Act. The Royal Society, after taking legal advice, adopted a "Declaration", in order to enable libraries to allow "fair copying" with safety, without first having to apply to publishers for specific permission in each case.

At the Society's invitation, the Council of the Institute adopted this "Declaration" in 1949 for a period of two years. At the expiration of this period the Royal Society reviewed the working of the "Declaration" and invited the Council to adopt it again, with leave to withdraw at any time should it so desire. On the recommendation of the Publications Committee, the Council agreed with this proposal. In this way the dissemination of scientific information through libraries is more easily accomplished by allowing readers to obtain reproductions, under specified safeguards, of excerpts from scientific and technical periodical publications.

THE OFFICES OF THE INSTITUTE

For a period of nearly eight years from June, 1941, the Institute occupied a suite of rooms in the Goring Hotel, S.W.1, and was able to use other rooms in the Hotel for its meetings. In April, 1949, the offices were transferred to 10 Allington Street, S.W.1, a move made possible by the kindness of Watney, Combe, Reid & Co. Ltd., although the meetings of the Council and its numerous Committees continued to be held at the Goring Hotel.

During the ensuing two years, a search was made for a property in London suitable for permanent offices. Many premises were inspected before, in 1951, a suitable building was found. The freehold of this property, 33 Clarges Street, Piccadilly, W.1, was purchased, and the offices of the Institute were moved to that address on November 8th, 1951.

RESEARCH

Retirement of Dr. R. Seligman

Dr. R. Seligman retired from the Chairmanship of the Research Fund Committee in 1948. He had held the position for some eight years, having been elected in 1940.

The occasion was marked by the passing of an appropriate Resolution by the Committee in which tribute was paid to Dr. Seligman's services to the Institute and the brewing industry, and by a presentation to him from his colleagues on the Committee.

Dr. Seligman was followed in the Chairmanship by Colonel W. H. Whitbread, while Colonel J. H. Porter, D.S.O., and Mr. N. B. Smiley were elected Deputy Chairmen.

The Evolution of the Research Scheme

The report on "The Reconstruction of the Research Organisation" was published in 1946. The Scheme outlined therein received the

general approval of the Brewers' Society and steps were taken by the Society to guarantee the necessary backing.*

The capital expenditure visualised was estimated on the basis of values obtaining in 1946. Owing, however, to prevailing conditions and the improbability of being able to embark on any large building programme for some years, it was thought that, provided that a sufficient annual income could be assured, it would be possible to set aside a sum each year for building purposes and thus obviate the need to raise a specific capital sum. This view was accepted by the Brewers' Society and a joint Finance Committee of the Society and the Institute was appointed in 1947 to supervise expenditure. The Committee consisted of twelve members, seven representing the Society and five the Institute.

These moves brought into prominence the acute need for the appointment of a full-time Director of Research to control the work already in progress and to supervise the planning, equipping and staffing of the projected central research establishment. Steps were taken to bring the post to the notice of suitable candidates and a Selection Committee was brought into being to consider applications. On its recommendation, Dr. J. Masson Gulland, F.R.S., then Professor of Organic Chemistry in University College, Nottingham, was appointed. He commenced his duties on October 1st, 1946, but his service was tragically short, for he was killed in a railway accident little more than three weeks later.

Pending the appointment of a successor to Dr. Gulland, Sir Ian Heilbron, D.S.O., D.Sc., LL.D., F.R.S., consented to act in an advisory capacity. After about eighteen months, the Council of the Institute felt able to congratulate itself on having found the right solution to a most important problem, for Sir Ian agreed to exchange his advisory position for the definite post of Director of Research. At his suggestion, a Director's Consultative Committee was appointed for advisory purposes.

Purchase of Lyttel Hall

Much time and thought were given to the question of a site for a

* The whole question of the financial organisation of the various bodies within the brewing industry, was considered by the Brewers' Society in 1946. The Rules of the Society were accordingly amended to make provision for a single omnibus subscription to cover not only the different phases of the Society's own work and the work of the National Trade Defence Association, but also the research work of The Institute of Brewing.

The Institute was also approved by the Agricultural Research Council as a "research organisation" for the purpose of Section 27(b) of the Finance Act, 1944. Subscribers to the Research Fund are thereby exempt from paying income tax on their subscriptions, and any research surplus on the year's work is not assessable to tax.

central research establishment* until the problem was solved in 1948 by the purchase of Lyttel Hall, Nutfield, Surrey, a property which was suitable for conversion into the necessary laboratories.

In planning this conversion, the need for scientific understanding of the fundamental factors involved was never lost sight of and the laboratories established at Nutfield were carefully designed to facilitate basic and applied research covering the whole field of brewing. At the same time, it was realised that the new research station was not intended to assume the functions either of the brewery laboratory or of the brewing consultant.

The Hall itself was devoted to the main experimental block and the administrative offices; a model brewery was constructed nearby; and, a little more removed, were located other laboratories, the workshops needed to provide experimental precision equipment of all kinds for use in research work, and the combined staff canteen and conference room.

The plans included a suite of three laboratories for applied brewing work; a main organic chemical laboratory and one for special operations in organic chemistry; analytical and micro-analytical laboratories; and a laboratory for biochemical investigations. Physical chemistry was allotted another suite of laboratories and there was a self-contained microbiological unit comprising three laboratories and several service rooms.

It was hoped that the laboratories would be ready for occupation and use by April, 1950, but unforeseen delays affecting structural alterations postponed the date of completion until July of the following year. Meanwhile it proved possible to carry out some work on the chemistry of hops in an outer building which had been converted into a modern laboratory.

A title for the establishment had been decided on by the Council, and thus "The Brewing Industry Research Foundation" came into being to reward the efforts which had been made for so long by the Institute, aided by the industry generally, to set up its own independent research station.

It will be seen that the Foundation is most excellently equipped to conduct investigations—which by their very nature are outside the scope of the individual brewery—into the main basic problems which call for investigation from time to time.

* Papers read in 1948 by Dr. R. Seligman before the Scottish Section and by Mr. E. M. Brown before the Yorkshire and North Eastern Section dealt with the importance of research and outlined the part which a central research establishment should play in the life of the industry.

The Closing Down of the Old Laboratories

Following on the establishment of the Research Foundation, the work carried out for the Institute in the College of Technology, Manchester, and the University of Birmingham was brought to a close, three of the senior research workers at the latter centre being transferred to Nutfield.

During the period under review much valuable work had been carried out at these centres and a number of papers dealing with aspects of it appeared in the Journal of the Institute. At Manchester, for instance, apart from the main scheme of work, help was given to Wye College in 1946 and 1947 on the analysis of new varieties of hops. At Birmingham some confidential work was carried out for the Department of Scientific and Industrial Research, but the main volume of research concerned various aspects of the drying and germination of barley, yeast nutrition, wort composition and barley proteins. Some of the work carried out for the D.S.I.R. was in connection with the storage of frozen beer and the concentrates obtained from beer by freezing it. This work, conducted in collaboration with the Low Temperature Research Station at Cambridge, has since been completed. An interim report on it was published in 1947.

Brewing trials were carried out at Birmingham in 1948 for the Hops Marketing Board with two new varieties of hops considered to be resistant to *Verticillium* wilt, and in the following year for the East Malling Research Station with seven clonal varieties of the Golding Hop.

The work carried out in the Brewing School by Professor Hopkins and others on the subject of vitamins in beer was continued.

Appointments to the new Foundation

Appointments to the scientific staff of the Research Foundation were made on a permanent full-time basis and under conditions similar to those appertaining in scientific institutions under official auspices.* Dr. A. H. Cook, of the Imperial College of Science and Technology, was appointed Assistant Director and Mr. F. G. Consterdine, also of the Imperial College, became Technical Superintendent of the Laboratories. Subsequently, through the generosity of Whitbread & Co. Ltd., Mr. B. M. Brown, the Company's chief chemist, was seconded to the Foundation as Controller of the Applied Division.

* One of the conditions of employment of the scientific staff is that the person appointed should join the Universities' Federated Superannuation Scheme, a contributory pension scheme. A somewhat similar scheme was adopted by the Council in 1950 to cover the non-academic staff of the Institute.

In 1950, the relationship between The Institute of Brewing and the Brewers' Society was put on a permanent basis by a number of resolutions passed at a meeting of the latter organisation held in October, 1950. The Council of the Society reaffirmed the decision taken in 1946 when it approved the establishment of a Research Foundation and accepted financial responsibility for its equipment and maintenance. The Council decided, too, that the annual financial allocation then being made for the upkeep of the Foundation should be continued indefinitely, subject to five years' notice of its intention to reduce the amount.*

Finally, a Research Committee of the Society was appointed on which that body and The Institute of Brewing had representation. This Committee was intended to act generally as a liaison in matters of mutual interest, including the Research Foundation. More particularly, it was to serve as a channel for the conveyance and discussion of any projects upon which the Society might feel that research should be undertaken; and it also had the duty of dealing with financial questions as between the two organisations.

It was made clear that the Committee was in no way expected to undertake responsibility for the organisation and supervision of the work of the Foundation which remained, as before, entirely in the hands of the Institute through its Research Fund Committee.

Six members were appointed by the Society to serve on its Research Committee, while the Institute was invited to nominate four representatives.

Revision of the Research Fund Scheme

The establishment of the Research Foundation suggested the need for some revision of the Rules and Regulations and Bye-Laws of the Institute to meet the new circumstances. It will be remembered that a Special Committee was appointed by the Council to consider what revisions were necessary. The deliberations of this Committee were based on the principle that the Foundation should not be a separate entity, but should be administered by the Institute. It was decided, therefore, that the first duty of the "new" Research Fund Committee should be to revise the Research Fund Scheme, which had operated since 1920, in order to bring the Foundation within its scope.

It was also decided that the term "Research Board" should be

* A further proviso empowered the Council of the Society to dispense with such notice in a case of emergency, by a resolution supported by not less than two-thirds of the members present at the Meeting.

substituted for the former title of "Research Fund Committee" and that the Board should include six members nominated by the Council and one member nominated by each Section of the Institute.

Extra-mural Work

Since the establishment of the Research Foundation a considerable amount of scientific work had been carried out extra-murally under its aegis. These investigations were conducted at various centres such as the University and the Heriot-Watt College at Edinburgh, Glasgow University, Oxford University and the Royal Institution and the Imperial College in London. Such arrangements have played, and play to-day, a very important part in ensuring constant contact between the Universities, the Research Foundation and the brewing industry, and in providing a continuous flow of scientists with fundamental training in subjects germane to the industry.

BARLEY

Breeding and Development of New Varieties

During the period there was close collaboration both with the Plant Breeding Institute and the National Institute of Agricultural Botany at Cambridge on research into new varieties of barley. In 1951 the advisory Sub-committee on Barley paid a visit to the former establishment and in the same year Dr. G. D. H. Bell (who had succeeded Dr. Hunter as Director of the Plant Breeding Institute) read a paper on barley breeding and related research before the London Section of The Institute of Brewing. The Institute has continued to make an annual contribution towards the work of the National Institute of Agricultural Botany and the barley variety trials, which were resumed in 1945 at seven centres, have since that date been greatly extended. Malting and brewing trials of new varieties of barley bred at Cambridge were made in 1946 at the maltings and brewery of Watney, Combe, Reid & Co. Ltd., and in 1947 at those of Whitbread & Co. Ltd.

A paper on the "Influence of Environment on the Yield and Quality of Certain Varieties of Malting Barley" was read by Dr. H. Hunter before the London Section in the latter year.

International Collaboration in Variety Trials

Arrangements were made in 1950 for the furtherance of a scheme for international co-ordination in the testing of new varieties of malting barley. The countries participating in this scheme are Belgium,

Denmark, France, Great Britain, Ireland, the Netherlands, Sweden and Switzerland.

A "Summary of Methods used for Testing new Varieties of Malting Barley in certain European Countries", by Mr. F. R. Horne, Director of the National Institute of Agricultural Botany, was published in 1950.

The variety of barley initially selected for the experiment* has been grown in each of the eight countries mentioned above, each country's crop being divided into eight portions for trial. In Great Britain, the N.I.A.B. arranged to grow and distribute the samples produced, while those grown on the continent have been collected and distributed by Dr. Van Veldhuizen. The malting methods are those commonly used in each country.

Full particulars of the lay-out of the plots at the N.I.A.B. have been sent to each of the participating countries, together with a copy of a field note-book based on the many years' experience.

Nomenclature and Registration of Barleys

The question of the nomenclature of barleys was raised in 1950 when the following associations were invited to express their views:—the Agricultural Research Council, the National Association of Corn and Agricultural Merchants, the Agricultural Seed Trade Association, the National Farmers' Union and the European Brewery Convention. The general opinion was that nomenclature might safely be left in the hands of the N.I.A.B.

At the same time it was suggested that a register of varieties of cereals† grown in Great Britain and Northern Ireland, in which recommended varieties would be clearly indicated, would serve a useful purpose. A recommendation to this effect was submitted to the Council of the N.I.A.B.

FIELD TRIALS

As has already been stated, the Institute has subscribed £100 a year since 1935 towards the barley researches at Rothamsted.

Since 1930 two six-course rotation experiments have been in operation, one on the clay loam at Rothamsted, the other on the sandy soil at the Woburn Experimental Station. The objects of these rotations has been to measure, year by year, the responses of six crops to each of the common fertilisers.

* This variety, "Kenia", was the subject of an article by Dr. H. Hunter published in 1949.

† It is understood that two such lists are current in the Netherlands. One of these is an official register of varieties and is designed for the protection of the grower. Farmers are only allowed to make use of registered varieties if they pay a licence fee to the grower who has the variety inscribed on the register. The second list is an unofficial one designed for practical use by farmers. It is in effect, a list of recommended varieties.

The findings of these investigations are very much in line with those resulting from the Institute's Barley Research Scheme which was operated from Rothamsted during the years 1922-31.

Experiments have also been carried out in recent years to determine the residual effects of various manures on yields of barley crops. All the evidence, it has been reported, points in the same direction, namely that major cultivations and manurings should be given to the first crop. Of the treatments applied to roots, farmyard manure appears to be the one most likely to carry through to give a further useful benefit to the succeeding barley crop.

CHEMICAL AND BIOCHEMICAL RESEARCH

A gift of £500 was made by the Brewers' Society in 1925 to the Heriot-Watt College, a condition being that the money should be used for technical work in connection with the brewing industry. The Governors of the College decided that the capital should be invested and the income allowed to accumulate for the purpose of providing a research scholarship. In 1948 Mr. A. S. Ashworth, B.Sc.Tech., was appointed under this grant, for a period of two years, to carry out an investigation, under the supervision of Dr. I. A. Preece, on "Cytolysis and related enzymic changes in germinating barley".

At the same time the College informed the Institute that room could be provided for additional research students should the Institute wish to nominate any under grants. As a result the interest on the capital sum mentioned above was augmented by the Institute in the autumn of 1949 by a further grant of £200 for two years.

HOPS

The Production of Hops

At the conclusion of hostilities an impetus was given to plans which had been maturing for the implementation of hop research. As a preliminary step, pending the development of these plans, the Research Fund Committee in 1946 sent a Resolution to the Agricultural Research Council emphasising the urgent need to extend the work at the Hop Research Station concerned with hop diseases. It pointed out that genetical and plant breeding work should be placed in the forefront of any research programme, as should also a more detailed study of the virus diseases and the natural method of their spread. It also suggested that, should the question of financial support for these investigations be a deciding factor in the development of the research work, the brewing industry would be prepared to assist the Research Stations, through the co-ordinating body for hop research, the Agricultural Research Council.

In due course, a scheme* for future research into hop production was agreed between the Ministry of Agriculture and the A.R.C. This Scheme, which received the approval of the Treasury, provided for the cessation of grants for hop research hitherto made by the Ministry and the A.R.C. to the South-Eastern Agricultural College and the Research Stations at East Malling and Long Ashton. This support had been increased by financial assistance from the Hops Marketing Board, the Brewers' Society and The Institute of Brewing.

In the place of these grants a small Hops Research Institute, ranking as one of the research institutes under the Ministry's scheme for such establishments, was set up in April, 1947, at Wye Agricultural College to carry out work on hop breeding, hop husbandry and certain aspects of the estimation of the brewing qualities of hops.

It was also agreed that the East Malling Research Station should allocate no definite part of the time of its staff to hop research, although some investigations into virus diseases of hops would probably fall within the scope of the general work of the Station and would be co-ordinated with the work carried out at Wye. The disease investigations at the long Ashton Research Station would likewise be terminated.

On the question of the financial upkeep of the new Hops Research Institute it was agreed that capital expenditure should be met by the Hops Marketing Board and The Institute of Brewing in equal proportions, and that, of the annual maintenance costs, the Ministry of Agriculture would make itself responsible for one half, while the Hops Marketing Board and the Institute each provided a quarter.† The Board and the Institute also agreed to provide a yearly sum of £500 for contingencies.

Dr. A. H. Burgess was appointed head of the new Hops Research Institute.

In 1950 the co-ordination between the Hops Research Institute and The Institute of Brewing was strengthened by the making of arrangements for the latter body's Advisory Sub-committee on Hops to discuss with the Hops Research Institute the yearly programme of work before

* Under this scheme the A.R.C. appointed a Technical Committee to co-ordinate the various aspects of hop research. In 1946 this Committee informed the Institute, in a Resolution, that "the establishment of an authoritative system of evaluating hops is urgently necessary if breeding work is to continue." In reply, the Research Fund Committee, which was wholly in agreement with this view, adumbrated the scheme of work on which the Institute would embark as soon as the necessary facilities were available.

† The total capital expenditure for the first three years ended March 31st, 1950, was estimated at about £16,000, while the maintenance was estimated to cost some £6,000 a year. The actual contributions from The Institute of Brewing for this period amounted to £9,822 15s. 0d. In 1950 the Treasury reduced the Ministry's contribution towards the maintenance from 50 per cent to 40 per cent so that the share of the Hops Marketing Board and the Institute was correspondingly increased.

it was submitted to the Hops Technical Committee of the A.R.C. for approval. It was also decided that a Committee consisting of representatives of the Ministry, the brewing industry and the Hops Marketing Board should meet annually to consider the expenditure on hop research.

Abstracts of annual reports on the work of both Wye College and East Malling appeared in the Institute's Journal in 1949, 1950 and 1951, and a number of original contributions on hops research, by Professor E. S. Salmon, Mr. S. C. Pearce and Mr. F. H. Beard, were published during the period under review.

New Varieties

For many years brewing trials of new varieties of hops, raised in the Wye College Nursery and grown at the East Malling Research Station, have been made for Professor Salmon by numerous firms. Similar help has also been given by the experimental brewery in the Institute's laboratories at Birmingham.

An increase in the acreage of the better known new varieties made wider distribution possible and, since 1941, it has been the practice to offer to firms such pockets of hops as are available for trial.*

More recently the Hops Marketing Board placed samples of new varieties from growths which first came into bearing in 1945, 1946 or 1947, and to which no courtesy call attached, at the disposal of the Brewers' Society for distribution among breweries wishing to ascertain their merits. The Society was also asked to distribute the new varieties grown at Wye and East Malling.

Brewers, to whom the hops were allocated, were asked to forward to the Society reports of any trial brews carried out so that the reports could be collated by the Institute and the main conclusions passed on to growers for their further guidance.

This work was carried out and in May, 1948, a summary of the reports was sent to the Brewers' Society. The Society, at the instance of the Institute, distributed copies to all brewers for their information. Copies were also sent to the Hops Marketing Board.

At the suggestion of the Board, the Institute's Advisory Sub-committee on Hops prepared and submitted to the Brewers' Society a questionnaire to be sent to all brewers wishing to continue the trials with hops of the 1948 crop. A summary of such questionnaires as were completed and returned was sent to the Hops Marketing Board as an interim report.

* A number of reports on brewing trials carried out during the period under review appeared in the Journal.

It was agreed that, pending the installation of the experimental brewery at the new Research Foundation's premises at Nutfield, the Institute could do no more than continue the method of inviting firms to try out some of the new varieties of hops. It was, however, suggested that a smaller number of brewers should be asked to carry out trials on the 1950 hops, and that these brewers should be called together to draft a uniform method of procedure.

Some eight firms accepted the invitation, trials being limited in the first place, to four new varieties. A similar number of the 1951 crop was selected for trials.*

Award of Challenge Cups

A third challenge cup—the "Merchants' Cup" was instituted in 1950. It is awarded for the best sample in the class for varieties which have been certified as showing resistance to *Verticillium* wilt. There are, therefore, three cups awarded annually for new varieties of hops and competitions for the former two (the Growers' Cup and the Brewers' Cup) have been held regularly since 1944.

Exhibitions of the "competition" hops and of other samples have been held each year in the showrooms of Messrs. Wigan, Richardson & Company, by the kindness and courtesy of that firm; in the College of Technology, Manchester (1948, 1949 and 1950); and in the North British Hotel, Edinburgh (1949 and 1950).

The Collection of Yeasts

In August, 1947, the Institute agreed to take over the Commonwealth Culture Collection of Yeasts, which formed part of the National Type Culture Collection maintained in this country under the auspices of the Medical Research Council.

Some 200 cultures were received by Mr. H. J. Bunker, of Barclay, Perkins & Co. Ltd., on behalf of the Institute and distributed in duplicate among a number of firms† which had generously agreed to maintain them and to supply strains to those requiring them. This was an interim measure pending the housing of the collection at the Institute's new research establishment, to which the collection was transferred in 1951.

Charges are made for cultures supplied to industrial undertakings, but cultures are supplied free to research organisations.

* The varieties were, of the 1950 crop, "John Ford", "Northern Brewer", "Malling Midseason" and "Pride of Kent"; of the 1951 crop, "Sunshine", "Keyworth's Midseason", "Keyworth's Early" and "Early Choice".

† The firms in question were Barclay, Perkins & Co. Ltd., Bass, Ratcliff & Gretton, Ltd., Charrington & Co. Ltd., Distillers Co. Ltd., A. Guinness, Son & Co. Ltd., Mitchells & Butlers Ltd., Whitbread & Co. Ltd., and Wm. Younger & Co. Ltd.

In 1949 Mr. Bunker was appointed to represent the Institute on the United Kingdom National Committee concerning the various collections of micro-organisms in the country.

SECRETARIAT

In view of the increasing accountancy work arising from the establishment of the Research Foundation, it was decided in 1950 that Mr. T. B. Sands, who had been Assistant Secretary of the Institute since 1936, should be appointed Accountant. The position of Assistant Secretary was allowed to remain vacant for the time being.

At the end of the following year Mr. W. H. Bird retired from the Secretaryship. He had been in the service of the Institute for 43 years and the Council passed a resolution of thanks to him on his retirement "for his eminent services to the Council and to The Institute of Brewing". A dinner was held in his honour at the Savoy Hotel, London, when a presentation was made to him.

Mr. G. E. R. Sandars, C.M.G., M.B.E., B.A., late Governor of the Blue Nile Province of the Sudan, succeeded Mr. Bird as Secretary.

A FINAL SUMMING UP

In these pages the history of the Institute has necessarily been divided into separate periods, each of which marks a step in the Institute's career. It is the author's hope that this record will be of value as a repository of information about the many varied activities which it describes. It is the purpose of this chapter to deal with two fundamental aspects, the work of the Sections and the achievement of the establishment of a Research Foundation.

THE SECTIONS

The Institute came into being as an amalgamation of several local institutions, all of which owed their origin to the devotion and enthusiasm of the people in their localities. Local loyalties played a considerable part in its early history and amalgamation was not achieved without some difficulty. Though the effect of the amalgamation was that the Institute could speak with one voice on matters of common interest, there was no abatement of local enthusiasm and the "Sections" continued to supply, as they still do, the real life and drive of the organisation. It is at the Section meetings that the papers are read and discussions held which form one of the most important activities of the Institute, and it is the Sections who at their own meetings, and later by their representations on the Council, decide who is to be admitted to membership. The Sections also exercise a major influence in directing the general policy of the Institute.

In 1904 there were four Sections, London, North of England, Yorkshire and North-Eastern and Midland Counties. A Scottish section was shortly added, and finally, in 1921, a section was formed at Burton-on-Trent. The Institute has been fortunate in finding a line of men able and willing to devote their spare time as officers to the organisation and administration of the Sections' activities; fortunate, too, in the continued enthusiasm of members which has sustained the efforts of a succession of office holders.

RESEARCH

The story of research goes back to the earliest days of the Laboratory Club. If research is the endeavour to discover facts by scientific study of a subject, then it may be said that research was the principal interest of that body. Later it was expressly included as a function of the Institute in its Rules. In the early years the work carried out was necessarily of a somewhat piecemeal character. The failure of the

original appeal for funds in 1900 precluded any possibility of undertaking organised research, and although committees were called together from time to time to investigate and report on particular subjects that were interesting the Industry, the 1914-18 war supervened before any organised research could be attempted. As soon as the war ended, however, the next step was taken, by the creation in 1919 of a new class of Research Members of the Institute and the appointment of a standing Research Committee to administer the fund to which their subscriptions were paid. Very wisely the Council in approving the scheme made it clear that there was to be no expenditure on major capital projects until the scheme had proved itself. Use had therefore to be made of existing facilities at Universities and Experimental Research Stations, and it says much for the co-operation received from these bodies that so much work of value to the Industry was accomplished during this period. By the kindness of the Senate the University of Birmingham formed a focus for the work and the Institute owes a great debt of gratitude to those far-sighted brewers of the Midlands, who were responsible for the foundation of the Brewing School there. It was during the years between the two wars that much of the work on barley and hops that pointed the way to later research was undertaken. Close liaison with the Rothamsted Experimental Station resulted in the first systematic studies of the properties of the barley grain; co-operation with the National Institute of Agricultural Botany (started in 1922) took the form of the assessment of the malting value of new varieties of barley bred at the Plant Breeding Institute, Cambridge; investigation of the hop was undertaken at the Manchester School of Technology and financial support was given by the Institute to the breeding of new varieties at Wye College and their testing at the East Malling Fruit and Hop Research Station; and a start was made in the chemical and biochemical investigation of barley at Birmingham University.

The appointment in 1927 of a Research Organiser was the first step towards co-ordination of the work undertaken at the various centres, and was followed in 1933 by the concentration of research work in the University of Birmingham.

It was not long, however, before the need became apparent both for a separate research station for the Industry and for a whole-time Director of Research, and in 1938, as a temporary measure, Sir Gilbert Morgan was appointed salaried Chairman of the Research Fund Committee.

Further progress was prevented by the outbreak of war in 1939 and the untimely death of Sir Gilbert Morgan in 1940, but from 1943

onwards the problem of reconstruction was constantly studied with the result that, when the war ended in 1945, the Council was able to put forward a considered scheme for Research which, with the generous backing of the Brewers' Society, brought into being the Brewing Industry Research Foundation at Lyttel Hall, Nutfield, Surrey.

The establishment of this Research organisation equipped with the most modern apparatus for its purpose and staffed, as it is, with first class research workers under the direction of one of the most distinguished scientists of his day is an achievement of which the Institute can be proud and for which the Industry should be grateful. From the Laboratory Club to Lyttel Hall the road has been long and beset with difficulties. It has been the Institute's constant pre-occupation to surmount them and its success in doing so has been perhaps its most valuable contribution to the Industry.

ENVOI

This History has only covered, as it were, the infancy of The Institute of Brewing, for half a century is not a long time in the life of any organisation. During these early years, however, The Institute has been fortunate in that it has been guided in its progress by the knowledge, the experience and the enthusiasm of the leaders of the brewing industry. It was founded on a firm basis and its activities have been developed on sound lines. The road ahead is unknown, but the prospect is bright if, like Byron, we believe that

“the best of Prophets of the future is the Past.”

APPENDIX A

PRESIDENTS OF THE INSTITUTE OF BREWING

C. H. BABINGTON	..	..	..	..	..	..	..	1904-5
SIR WILLIAM WATERS BUTLER, Bart.	..	..	..	..	..	..	..	1905-6
M. M. W. BAIRD	..	..	..	..	..	..	..	1906-7
A. GORDON SALAMON	..	..	..	..	..	..	..	1907-8
J. G. GROVES, D.L., J.P.	..	..	..	..	..	..	..	1908-9
EDWYN F. BARCLAY	..	..	..	..	..	..	..	1909-10
H. H. RILEY-SMITH..	..	..	..	..	..	..	..	1910-11
A. CHASTON CHAPMAN, F.R.S.	..	..	..	..	..	..	..	1911-13
F. P. WHITBREAD	..	..	..	..	..	..	..	1913-15
T. WATSON LOVIBOND	..	..	..	..	..	..	..	1915-17
ADRIAN J. BROWN, F.R.S.	..	..	..	..	..	..	..	1917-19
SYDNEY O. NEVILE	..	..	..	..	..	..	..	1919-21
H. E. FIELD	..	..	..	..	..	..	..	1921-23
E. R. MORITZ	..	..	..	..	..	..	..	1923-24
R. V. REID	..	..	..	..	..	..	..	1924-26
F. P. WHITBREAD	..	..	..	..	..	..	..	1926-28
R. J. B. STOREY	..	..	..	..	..	..	..	1928-30
PERCY GATES	..	..	..	..	..	..	..	1930-32
JAMES STENHOUSE	..	..	..	..	..	..	..	1932-34
CHRISTOPHER GEORGE	..	..	..	..	..	..	..	1934-36
H. W. HARMAN	..	..	..	..	..	..	..	1936-37
C. E. W. CHARRINGTON, M.C.	..	..	..	..	..	..	..	1937-38
T. E. GRANT	..	..	..	..	..	..	..	1938-39
COLONEL J. H. PORTER, D.S.O.	..	..	..	..	..	..	..	1939-41
G. T. COOK	..	..	..	..	..	..	..	1941-43
H. W. HARMAN	..	..	..	..	..	..	..	1943-44
C. E. W. CHARRINGTON, M.C.	..	..	..	..	..	..	..	1944-45
WALTER SCOTT, J.P.	..	..	..	..	..	..	..	1945-47
M. V. COURAGE	..	..	..	..	..	..	..	1947-52

APPENDIX B

MEMBERS OF THE COUNCIL, 1904-1951

	Period 1904-18	Period 1919-34	Period 1935-45	Period 1946-51	Re- signed	De- ceased
ABBOT, HUGH	1912-17	{ 1919-24 1927-30				1933
ALDOUS, H. GRAHAM ..	1904-05					1930
ALLAN, ROBT. ..			1939-45			
ANDREWS, C. VINCENT	1918	{ 1919-24 1926-27			1929	
ANSELL, THOS. ..	1911-15					1935
AULD, JAMES		1922-25			1931	
BABINGTON, C. H. ..	{ 1904-05 1916-17	{ 1921-22 1925-34	1935-45	1946-51		1951
BAIRD, M. M. W. ..	1905-15					1915
BAKER, JULIAN L. ..	1907-18	1919-34	1935-45	1946-51		
BARCLAY, EDWYN F. ..	1909-17	1919-30				1930
BARCLAY, ROBT. ..	1904-13					1913
BARRINGTON, A. ..		1926-28				
BAYLIS, G. E.			1939-45	1946-47		1948
BEAVEN, E. S.	1910-13					1941
BEETLESTONE, N. C. ..		1926-31				1935
BERRY, R. E.	1916-18	1919-20				1920
BEAVEN, F. L.	1904-09					1909
BINNIE, J. B.		1934	1935-45	1946-51		
BODDINGTON, R. S. ..	1904-15					1930
BONNER, H. S.		1926				1926
BONSOR, SIR H. COSMO, Bart.	1904-15					1929
BOWYER, F. H... ..				1947-51		
BRAITHWAITE, E. A. ..		1933-34	1935-45	1946-51		
BRIANT, LAWRENCE ..	{ 1906-12 1914-17					1924
BRICKWOOD, HARRY ..		1929-34	1935-36			1950
BRICKWOOD, SIR JOHN	1904-15					1932
BRIGGS, F.	1912-16					1923
BROOK, A. H.				1949-51		
BROWN, PROFESSOR A. J.	1904-18					1919
BROWN, B. M.			1944-45	1946-51		
BROWN, HORACE T. ..	1910-18					1925
BROWNE, J. HARRIS ..	1913-18	1919-20				1932
BURDASS, F. G.			{ 1936-37 1940-45	1946-50		
BURDASS, G. R.	1904-15	1919-21				1921
BURNS, J. A.			1939-45	1946-51		
BURTON, THE RT. HON.	1904-09					1909
LORD, R.C.V.O.						

A HISTORY OF THE INSTITUTE OF BREWING

	Period 1904-18	Period 1919-34	Period 1935-45	Period 1946-51	Re- signed	De- ceased
BUTLER, G.		1933-34				1935
BUTLER, R. H. ..		1929-31	1940-45	1946-51		
BUTLER, SIR WM. WATERS, Bart.	1904-18	1919-34	1935-39			1939
BUXTON, LT.-COL. E. N.		{ 1922-31 1933-34	1935-45	1946-51		
BUXTON, F. B. ..			{ 1938-42 1943-44			
BUXTON, H. F. ..	1904-15					1949
CANNON, M. J. ..	{ 1904-10 1912-15					1939
CHAMBERLAIN, C. R. ..		1923-24			1930	
CHAPMAN, A. CHASTON	1904-18	1919-32				1932
CHARRINGTON, C. E. W.		1933-34	1935-45	1946-51		
CHARRINGTON, COL. FRANCIS	1906-15					1921
CHARRINGTON, SPENCER C.	1904					1904
CHIVERTON, F. J. ..				1951		
CHUBB, H. M. ..	1907-18	1919-30				1944
CLAPHAM, A. A. ..		1930-32				
CLARKSON, G. D. ..		1934	{ 1935-36 1943-45	1946-48		
COGHILL, SIR PATRICK, Bart.			1939-40		1948	
COLLARD, CHAS. ..	1906-10					1914
COLLETT, COL. J. H. ..		1931-32				1942
COLLIER, E. B. ..	1914-18	1919				1942
COMBE, S. H. ..		1929-34	1935-36			
COMRIE, A. A. D. ..			1942-43			
COOK, G. T. ..		1931-34	1935-45	1946-51		
CORY-WRIGHT, CMDR. A.				1947-51		
COSBIE, A. J. C. ..		1932-34	1935-45	1946-51		1951
COTCHING, A. ..		{ 1924-30 1932-34			1946	
COURAGE, M. V. ..			1944-45	1946-51		
COX, H. J. ..				1947-49		
CRISP, J. F. ..			1935-45			1949
CROMBIE, J. D. ..	1906-08				1933	
DANIELL, J. G. ..		{ 1923-28 1931-34	1935-45	1946-51		
DAVIS, T. E. ..		1920-24				1938
DIXON, BERNARD ..			1939-41			
DOULL, A. CLARK ..			1936-39	1950-51		
DOULL, JOHN ..	1906-18	1919-29				1929
DRYDEN, H. E. ...		1934	1935-36			

APPENDIX B

	Period 1904-18	Period 1919-34	Period 1935-45	Period 1946-51	Re- signed	De- ceased
EVANS, G. C.		1927-29				1950
EVANS, W. H.	1910-12					1931
FERGUSON, R. M.				1947-49		
FIELD, H. E.	1914-18	1919-34	1935-45	1946-47		1947
FINCH, L. H.		1922-34	1935-45	1946-51		
FINZEL, C. A.		1921-27			1932	
FLETCHER, L.		1929-34	1935-36	1948-51		
FORD, JOHN S.	1908-10	1925-34	1935-43			1943
GARTON, SIR RICHARD C.	1912-14					1934
GATES, H. W.	1913-14					
GATES, PERCY		1930-34	1935-40			1940
GEORGE, CHRISTOPHER		1934	1935-45	1946-51		
GLENNY, G. W.	1917-18	{ 1919-21 1924-27				1943
GOODMAN, T.		1934				
GRANT, JAS.			1936-45	1946-51		
GRANT, T. E.		1934	{ 1935-36 1938-45 1935-37	1946		1946
GREEN, A. B.					1909	
GROOM, A. J.	1904-08				1932	
GROVES, J. E. G.	1904-06					1914
GROVES, J. GRIMBLE ..	1904-14				1914	
GROVES, W. GRIMBLE ..	1904-14					1909
GUINNESS, SIR REGINALD, Bart.	1904-09					
HADLEY, ARTHUR		1930-34	1935-38			1949
HANBURY, JOHN M. ..	1904-15					1923
HARDIE, J. H.			1936-37		1948	
HARMAN, H. W.	1917-18	{ 1919-22 1929-34	1936-45	1946-51		
HARROW, G. H. U. ..	1911-14				1921	
HASTIE, S. H.		1934	1935-36			
HAWORTH, G. A. G. ..			1939	1947-48		
HAWORTH, G. P.			1944-45	1946		
HAYCRAFT, A. C.	1904-09					1910
HEATON, JOHN	1905-08				1925	
HERON, HAROLD		1921-34	1935-45	{ 1947-49 1951		
HERON, JOHN	{ 1904-08 1910-13					1913
HERON, T. H.		1928-30			1938	
HERROD, B. J.			1936-37	1948-51		
HILL, H. R.		1925-26				
HILL FORSTER, R. W.		1931-34	{ 1935 1937-45	1946-51		

A HISTORY OF THE INSTITUTE OF BREWING

	Period 1904-18	Period 1919-34	Period 1935-45	Period 1946-51	Re- signed	De- ceased
HIND, H. LLOYD ..		{ 1920-25 1927-33	1935-41			1941
HITCH, LEONARD ..	1915-18	1919-25			1932	
HODSON, L. W. ..	1904-07				1907	
HOLLAND, W. G. ..			1938-40			
HOLT, SIR EDWARD, Bart.	1904-15					1928
HOLT, SIR EDWARD, Bart.			1937-39			
HOMER, M. H. ..				1951		
HOPKINS, PROF. R. H...		1930-32	1938-45			
HORNSEY, W. E. ..	1917-18	{ 1919-23 1924-25 1927-29				
HOUGHTON, A. A. ..				1949-51		
HOYLE, C. F. ..	1907-08				1909	
HULTON, H. F. E. ..	1913-18	1919-31				1939
HUTCHINSON, H. B. ..			1939-45	1946-49		
HUXLEY, J. W. ..	1914-16				1922	
HYDE, C. A. ..			1944-45	1946-47		
HYDE, C. F. ..	{ 1909-11 1918	1919-34	1935-40		1940	
HYDE, FRED ..		1924-26				
HYDE, G. W. ..			1940-41		1949	
HYDE, R. W. ..				1946-51		
HYDE, THOS. ..	{ 1906-09 1911-13					1939
HYDE, T. GRIMSHAW ..		1932-34				1947
INCHES, JOHN MORISON	1910-12					
INCHES, JOHN MORISON			1939-45	1951		1914
JEFFREY, ROBT. ..	1905-08					
JOHNSTON, A. F. ..			1937-38			1943
JONES, G. CECIL ..	{ 1909-14 1916-18				1941	1940
JOHNSTON, J. H. ST. ..				1947-51		
KELLY, H. E. ..				1948-51		
KIBBLE, A. W. ..		{ 1920-24 1926-34				1935
KING, W. G. ..		1928-30			1937	
KITCHEN, W. ..				1946-48		
KNOX, J. H. ..			1935-37			1939
LAKE, E. L. D... ..			1937-38			1946

APPENDIX B

	Period 1904-18	Period 1919-34	Period 1935-45	Period 1946-51	Re- signed	De- ceased
LAMB, W. W. ..		1925-34	1935-36			1936
LANCASTER, H. M. ..			1940-45	1946-47		
LANSDALE, R. R. ..	1910-13	1919-25				1927
LA TOUCHE, C. D. ..	1910-15					1915
LAURIE, J. K. ..	1905-07				1909	
LE MAY, ERNEST ..		1928-34				1948
LE MAY, P. K. ..	1916-18	1919-22			1932	
LEES, A. L. ..	1904-11					1921
LIGHT, E. F. ..	1904-10				1920	
LING, A. R. ..	1916-17	1921-23	1936-37			
LONES, J. A. ..				{ 1946-48 1950-51		
LONES, JOHN M. ..	1906-18	1919-20				1928
LORIMER, G. ..	1905-06				1908	
LOTT, F. E. ..	1907-10					1919
LOVIBOND, T. WATSON	{ 1910-12 1916-18	1919				
LUBBOCK, C. ..	1912-15				1946	
MANN, SIR EDWARD, Bart.	1904-15					1943
MARRIOTT, H. J. ..	1913-18					1943
MARRIOTT, W. E. ..	1908-09	1919-20			1923	
MASON, F. A. ..	1914-18					1936
MATTHEWS, C. G. ..		1924-25			1931	
MATTHEWS, G. C. ..		1928-30		1950-51		
MAYNARD, F. M. ..	1914-18	1919-23				1930
MERSAN, F. DE ..		1921-22			1949	
MILBURN, ROBT. ..	1904-10					1910
MILLER, A. K. ..	{ 1904-08 1912-14					1945
MOODY, J. B. ..	1908-09				1933	
MORITZ, E. R. ...	1904-18	1919-31				1931
MORRIS, A. H. ..		{ 1920-22 1928-31				
MURE, A. H. ..	1904-18	1919-31				1931
MURPHY, A. J. ..	1904-06				1919	
MYER, SYDNEY ..	1914-15					
NEVILLE, SIR SYDNEY O.	1907-18	1919-34	1935-45	1946-51		
NEWBOLD, LT.-COL. C.J.			1938-45	1946		1946
OLIVER, COL. B. E. ..			1938-45	1946-51		
OLIVER, DR. J. H. ..				1949-51		
OVERBECK, OTTO ..	1906-18	1919-21			1928	

A HISTORY OF THE INSTITUTE OF BREWING

	Period 1904-18	Period 1919-34	Period 1935-45	Period 1946-51	Re- signed	De- ceased
PARKHURST, S. W. ..	1913-17	1932-34				1943
PATERSON, W. B. M. ..	1915-17					1933
PEARD, G. T. ..			1938-40	1951		
PORTER, COL. J. H. ..			1936-45	1946-51		
PREECE, PROF. I. A. ..				1946-48		
RADCLIFFE, J. C. ..		1925-29			1950	
RANKEN, CLARK ..		1926-28				1936
RAPP, RICHARD ..		1921-22			1927	
REAVENALL, A. C. ..		1928-33				
REEVE, T. F. ..	1904-11					1929
REID, R. V. ..	1913-18	1919-34	1935-45	1946-49		1949
RICHARDSON, W. A. L. ..	1917-18	1919				1919
RILEY, W. A. ..	1911-18	1919-34	1935-45	1946-48		1948
RILEY-SMITH, H. H. ..	1904-11					1911
RIPLEY, G. F. ..				1951		
ROBERTSON, DAN ..		1924-25				1943
ROGERS, A. W... ..	1904-5					1931
ROWE, W. PASSMORE ..	1917-18	1920-21				1933
RUSSELL, J. R. ..			1937-40			
RYDER, HERBERT ..	1913-17	1919-27			1928	
SALAMON, A. GORDON ..	1904-05					1918
SANDBACH, R. S. ..				1948-51		
SCHIDROWITZ, P. ..	1908-11					
SCLATER, H. N. ..				1949-51		
SCOTT, WALTER ..		{ 1923-26 1930-34	1945	1946-51		
SCULLY, R. L. ..		1931-34	1935			
SEED, B. V. S. ..				1950-51		
SELIGMAN, R. ..			1944-45	1946-51		
SIAU, R. L. ..	1910-14					1948
SIMPKINS, L. E... ..		1921-34	1935-36		1946	
SIMS, F.		1930-32			1948	
SKINNER, L. R... ..		1933-35	1935-37			
SLATOR, ARTHUR ..		1928-30				
SMILEY, N. B.				1947-51		
SMITH, C. J.		1927-31				1931
SMITH, F. A.		1929-33	1938-39			
SMITH, W. T.		1934	1935-45	1946-51		
SPROULLE, W. J. M. ..		1929-33				
STENHOUSE, A. S. ..		1924-25			1933	
STENHOUSE, JAS. ..	{ 1906-10 1913-18	1919-34	1935-45	1946-51		
STERN, A. L.		1921-23				1947
STEWART, JAS.		1927-31				1918
STONE, C. GARTON ..	1914-18					

APPENDIX B

	Period 1904-18	Period 1919-34	Period 1935-45	Period 1946-51	Re- signed	De- ceased
STONE, W. GARTON ..		1926-28			1913	
STOREY, R. J. B. ..	1918	1919-34	1935-45	1946-51		
		1919-21				
STROUTS, E. M. ..		1923-24				
		1925-28				
		1929-34				
SUTCLIFFE, T. R. ..		1928-33	1936-44			
SUTCLIFFE, C. E., Jnr.		1924-28				1929
TAIT, ADAM			1937-45	1946-50		
TAIT, NORMAN ..			1940-45	1946-47		
TALBOT, F. L. ..	1904-08					1935
TANQUERAY, A. C. ..	1904-15					1917
TAYLOR, ALBERT	1909-10					1927
EDWARD						
TAYLOR, ARTHUR EDGAR			1944-45	1946-51		
TETLEY, C. F. ..	1904-15					1934
TETLEY, BRIGADIER J. N.				1951		
THOMPSON, L. C. ..			1937-45		1945	
THOMPSON, S. H. ..		1925-34	1935-45	1946-51		
THORNE, F. G. ..	1911-15				1915	
THORNE, L. T. ..	1904-17	1919-34	1935-36			1941
		1921-28			1941	
THORPE, C. H... ..		1932-34				
TRINDER, HAROLD ..	1904-05					1922
URQUHART, W. T. ..	1912-18	1919-20			1946	
VALENTIN, A. A. W. ..	1908-13					
VAUX, CUTHBERT ..	1910-12				1922	
WALKER, T. K. ..				1949-51		
WALL, T. H. /	1918	1919-20				
WARREN, C. A. ..		1930-34	1935-37			1947
WARWICK, W. A. ..			1935-37			1940
			1935-39			
WATKINS, W. J. ..		1928-29				
		1931-34				
WATNEY, SANDERS ..			1936-45	1946-51		
WATTS, S. E.		1922-32				1941
WELLER, F. H... ..			1940-41			
WELLS, J. G.	1904-07				1922	
	1910-12					
WETHERALL, B. G. C.		1920-21			1935	
WHITAKER, R.		1922-24	1936-45	1946-48		1948
WHITBREAD, F. P. ..	1904-18	1919-34	1935-41			1941
WHITBREAD, COL. W. H.			1945	1946-51		

A HISTORY OF THE INSTITUTE OF BREWING

	Period 1904-18	Period 1919-34	Period 1935-45	Period 1946-51	Re- signed	De- ceased
WHITEHEAD, H. H. ..	1904-05	1924-29	1945 1936-37	1946-47 1951	1934 1921	1939
WIGAN, A. L. ..						
WILLIAMSON, G. H. ..						
WILLIS, A. H. ..						
WILMOT, J. H. B. ..	1904-15	1920-22 1921-27	1935-45	1948-50	1912	1935
WILSON, H. C. ..						
WILSON, W. R. ..						
WOOD, B. ..	1909-12	1930-34 1923-25	1935-45	1948-50	1912	1951
WORSSAM, ERNEST ..						
YEOMANS, F. A. ..						
YEOMANS, A. H. ..						
YOUNGER, H. G. ..	1908-13	1932-34	1935-45	1948-50	1912	1951
YOUNGER, J. W. H. B. ..						

APPENDIX C

HON. TREASURERS

A. H. MURE ..	..	..	..	..	..	..	1904-26
H. E. FIELD ..	..	..	..	..	..	..	1926-45
G. T. COOK ..	..	..	..	..	..	..	1945-47
S. WATNEY ..	..	..	..	..	..	..	1947-

APPENDIX D

TRUSTEES

E. F. BARCLAY ..	..	..	..	..	..	..	1909-29
E. F. LIGHT ..	..	..	..	..	..	..	1909-20
A. H. MURE ..	..	..	..	..	..	..	1909-31
SIR WILLIAM WATERS BUTLER, Bart.	..	..	..	..	..	..	1920-39
F. P. WHITBREAD ..	..	..	..	..	..	..	1920-41
LT.-COL. E. N. BUXTON, M.C.	..	..	..	..	..	..	1930-
R. J. B. STOREY ..	..	..	..	..	..	..	1930-48
A. MITCHELL ..	..	..	..	..	..	..	1939-
C. E. W. CHARRINGTON, M.C.	..	..	..	..	..	..	1941-50
S. WATNEY ..	..	..	..	..	..	..	1948-
COL. W. MCE. YOUNGER, D.S.O.	..	..	..	..	..	..	1951-

APPENDIX E

CHAIRMEN OF THE RESEARCH FUND COMMITTEE

SYDNEY O. NEVILLE	1920-23
E. R. MORITZ, PH.D.	1923-24
J. S. FORD	1924-27
A. CHASTON CHAPMAN, F.R.S.	1927-30
L. H. LAMPITT	1931-33
JAMES STENHOUSE	1933-37
H. W. HARMAN	1937-38
SIR GILBERT MORGAN, O.B.E., F.R.S.	1938-40
R. SELIGMAN	1940-48
COLONEL W. H. WHITBREAD, T.D.	1948-

APPENDIX F

CHAIRMEN OF THE SECTIONS

London Section

A. L. WIGAN	1904
A. C. TANQUERAY	1905
A. GORDON SALAMON	1906
E. F. LIGHT	1907
A. CHASTON CHAPMAN, F.R.S.	1908
T. F. REEVE	1909
LAWRENCE BRIANT	1910
SYDNEY O. NEVILLE	1911
JULIAN L. BAKER	1912
J. STENHOUSE	1913
L. T. THORNE	1914
H. E. FIELD	1915
A. R. LING	1916
P. K. LE MAY	1917-18
W. A. RILEY	1919-20
R. J. B. STOREY	1921-22
H. F. E. HULTON	1923-24
C. A. FINZEL	1925-26
JAMES STEWART	1927-28
H. W. HARMAN	1929-30
W. J. WATKINS, B.E.M.	1931-32
L. E. SIMPKINS	1933-34
J. F. CRISP	1935-36
A. F. JOHNSTON	1937-38

A HISTORY OF THE INSTITUTE OF BREWING

London Section—Continued

BERNARD DIXON	..	..	..	..	..	..	1939-40
HAROLD HERON	..	..	..	..	..	..	1941-45
W. T. SMITH	..	..	..	..	..	..	1946-47
B. M. BROWN	..	..	..	..	..	..	1948-49
CMDR. A. CORY-WRIGHT, D.S.C., R.N. (RETD.)	..	..	..	..	..	..	1950-51

North of England Section

J. E. G. GROVES	..	..	..	..	..	..	1904-5
A. L. LEES	..	..	..	..	..	..	1906-7
T. HYDE	..	..	..	..	..	..	1908
ALBERT E. TAYLOR	..	..	..	..	..	..	1909
J. G. WELLS	..	..	..	..	..	..	1910-11
A. K. MILLER	..	..	..	..	..	..	1912-13
H. J. MARRIOTT	..	..	..	..	..	..	1914-15
C. GARTON STONE	..	..	..	..	..	..	1916-17
T. H. WALL	..	..	..	..	..	..	1918-19
A. H. MORRIS	..	..	..	..	..	..	1920-21
R. WHITAKER	..	..	..	..	..	..	1922-23
F. HYDE	..	..	..	..	..	..	1924-25
W. GARTON STONE	..	..	..	..	..	..	1926-27
C. J. SMITH	..	..	..	..	..	..	1928-29
A. A. CLAPHAM	..	..	..	..	..	..	1930-31
T. G. HYDE	..	..	..	..	..	..	1932-33
G. D. CLARKSON	..	..	..	..	..	..	1934-35
B. J. HERROD, M.C.	..	..	..	..	..	..	1936-37
W. G. HOLLAND	..	..	..	..	..	..	1938-39
F. H. WELLER	..	..	..	..	..	..	1940-41
A. A. D. COMRIE	..	..	..	..	..	..	1942-43
C. A. HYDE, A.F.C.	..	..	..	..	..	..	1944-46
R. M. J. C. FERGUSON	..	..	..	..	..	..	1947-48
T. K. WALKER	..	..	..	..	..	..	1949-50
F. J. CHIVERTON	..	..	..	..	..	..	1951-

Yorkshire and North-Eastern Section

C. F. TETLEY	..	..	..	..	..	..	1904-5
H. H. RILEY-SMITH	..	..	..	..	..	..	1906
O. OVERBECK	..	..	..	..	..	..	1907-9
H. M. CHUBB	..	..	..	..	..	..	1910-11
R. R. LANSDALE	..	..	..	..	..	..	1912
H. W. GATES	..	..	..	..	..	..	1913
F. A. MASON	..	..	..	..	..	..	1914-18
H. M. CHUBB	..	..	..	..	..	..	1919-20
F. DE MERSAN	..	..	..	..	..	..	1921-22
C. E. SUTCLIFFE	..	..	..	..	..	..	1923-24

APPENDIX F

Yorkshire and North-Eastern Section—Continued

J. C. RADCLIFFE	..	..	..	..	..	..	1925-26
H. M. CHUBB	..	..	..	..	..	..	1927-28
W. J. M. SPROULLE	..	..	..	..	..	..	1929-30
R. W. HILL FORSTER	..	..	..	..	..	..	1931-32
L. R. SKINNER	..	..	..	..	..	..	1933-34
T. R. SUTCLIFFE	..	..	..	..	..	..	1935-36
J. R. RUSSELL	..	..	..	..	..	..	1937-38
G. A. G. HAWORTH	..	..	..	..	..	..	1939
NORMAN TAIT	..	..	..	..	..	..	1940-46
G. A. G. HAWORTH, M.C.	..	..	..	..	..	..	1947
R. S. SANDBACH	..	..	..	..	..	..	1948-49
A. J. C. COSBIE	..	..	..	..	..	..	1950-51

Midland Counties' Section

W. R. WILSON	..	..	..	..	..	..	1904-5
J. M. LONES	..	..	..	..	..	..	1906-7
A. J. BROWN	..	..	..	..	..	..	1908-9
W. H. EVANS	..	..	..	..	..	..	1910-11
R. L. SIAU	..	..	..	..	..	..	1912-13
F. M. MAYNARD	..	..	..	..	..	..	1914-18
G. R. BURDASS	..	..	..	..	..	..	1919-20
A. R. LING	..	..	..	..	..	..	1921-22
W. SCOTT	..	..	..	..	..	..	1923-24
S. H. THOMPSON	..	..	..	..	..	..	1925-26
G. C. EVANS	..	..	..	..	..	..	1927-28
F. A. SMITH	..	..	..	..	..	..	1929-30
J. H. COLLETT	..	..	..	..	..	..	1931-32
G. BUTLER	..	..	..	..	..	..	1933
T. E. GRANT	..	..	..	..	..	..	1934-35
F. G. BURDASS	..	..	..	..	..	..	1936-37
R. H. HOPKINS	..	..	..	..	..	..	1938-45
J. A. LONES	..	..	..	..	..	..	1946-47
B. WOOD	..	..	..	..	..	..	1948-49
B. V. S. SEED	..	..	..	..	..	..	1950-51

Scottish Section

G. LORIMER	..	..	..	..	..	..	1905
R. JEFFREY	..	..	..	..	..	..	1906-7
J. S. FORD	..	..	..	..	..	..	1908-9
J. MORISON INCHES	..	..	..	..	..	..	1910-11
W. T. URQUHART	..	..	..	..	..	..	1912-13
R. V. REID	..	..	..	..	..	..	1914-19
H. C. WILSON	..	..	..	..	..	..	1920-21
A. S. STENHOUSE	..	..	..	..	..	..	1922-23

A HISTORY OF THE INSTITUTE OF BREWING

Scottish Section—Continued

D. ROBERTSON (Falkirk)	..	..	..	..	..	..	1924-25
C. RANKEN ..	..	..	..	..	..	..	1926-27
W. G. KING ..	..	..	..	..	..	..	1928-29
R. H. HOPKINS ..	..	..	..	..	..	..	1930-31
J. W. H. B. YOUNGER	..	..	..	..	..	..	1932-33
S. H. HASTIE, O.B.E.	..	..	..	..	..	..	1934-35
J. H. HARDIE ..	..	..	..	..	..	..	1936
ADAM TAIT ..	..	..	..	..	..	..	1937-38
J. MORISON INCHES	..	..	..	..	..	..	1939-45
I. A. PREECE ..	..	..	..	..	..	..	1946-47
L. FLETCHER ..	..	..	..	..	..	..	1948-49
A. CLARK DOULL ..	..	..	..	..	..	..	1950-51

Burton-on-Trent Section

A. L. STERN ..	..	..	..	..	..	..	1921-22
A. H. YEOMANS ..	..	..	..	..	..	..	1923
C. G. MATTHEWS ..	..	..	..	..	..	..	1924-25
A. BARRINGTON ..	..	..	..	..	..	..	1926-27
A. SLATOR ..	..	..	..	..	..	..	1928-29
F. SIMS ..	..	..	..	..	..	..	1930-31
C. H. THORPE ..	..	..	..	..	..	..	1932-33
H. E. DRYDEN ..	..	..	..	..	..	..	1934-35
A. H. WILLIS ..	..	..	..	..	..	..	1936-37
G. T. PEARD ..	..	..	..	..	..	..	1938-39
F. A. YEOMANS ..	..	..	..	..	..	..	1940-42
F. B. Buxton ..	..	..	..	..	..	..	1943-44
G. H. WILLIAMSON	..	..	..	..	..	..	1945-46
J. H. St. JOHNSTON	..	..	..	..	..	..	1947-48
G. C. MATTHEWS ..	..	..	..	..	..	..	1949-50
MAJOR L. H. FINCH, M.B.E., T.D.	..	..	..	..	..	..	1951-

APPENDIX G

SECRETARIES

DR. E. B. PYMAR ..	..	..	..	..	..	..	1904-8
JULIAN L. BAKER (Honorary Secretary)	..	..	..	..	..	..	1908-17
W. H. BIRD ..	..	..	..	..	..	..	1918-51
G. E. R. SANDARS, C.M.G., M.B.E.	..	..	..	..	..	..	1951-

ASSISTANT SECRETARIES

W. H. BIRD ..	..	..	..	..	..	..	1908-17
C. E. RANDELL ..	..	..	..	..	..	..	1925-30
T. B. SANDS ..	..	..	..	..	..	..	1936-51

APPENDIX H

ARMORIAL BEARINGS

In 1937, following on a suggestion made at a meeting of the Chairmen and Hon. Secretaries of the Sections, the Institute considered the question of a Coat of Arms and also a Badge of Office for the President's use on official occasions.

An offer by the then President, Mr. C. E. W. Charrington, to defray the cost of, and to present a Coat of Arms to the Institute was gratefully accepted by the Council which referred the matter to a Committee, consisting of the President, Lt.-Col. E. N. Buxton, M.C., and Mr. F. P. Whitbread.

A grant of Arms was made to the Institute by Letters Patent on January 5th, 1928 :—*Gules two Garbs of Barley in Saltire between three Tuns fessewise Or and for the Crest Issuant out of a Coronet composed of four Hop Cones and as many Hop Leaves alternately set upon a Rim Or a demi Griffin Sable supporting a Malt Shovel Gold.* The motto, chosen on the recommendation of the Committee mentioned above, was taken from Virgil's *Georgics*, Book II, and read, "Rerum cognoscere causas".

President's Badge of Office

At the Annual General Meeting held on March 4th, 1938, Mr. H. E. Field, the then Hon. Treasurer, presented to the Institute a Presidential Badge of Office. This badge, which is a replica in gold and enamel of the armorial bearings, was first worn by Mr. Charrington who presided at the meeting.

GIFTED IN THE MEMORY OF
MR. M. V. SHIRSAT M. Sc
101 B. Prakash Nagar,
Mogul Lane, Mahim,
BOMBAY-16.



E. R. MORITZ, PH.D., F.R.I.C.
Founder of the Laboratory Club, 1886.
President of the Institute, 1923-24.
Chairman, Research Fund Committee, 1923-24.



HORACE T. BROWN, LL.D., F.R.S.

A pioneer of the application of scientific principles to brewing.

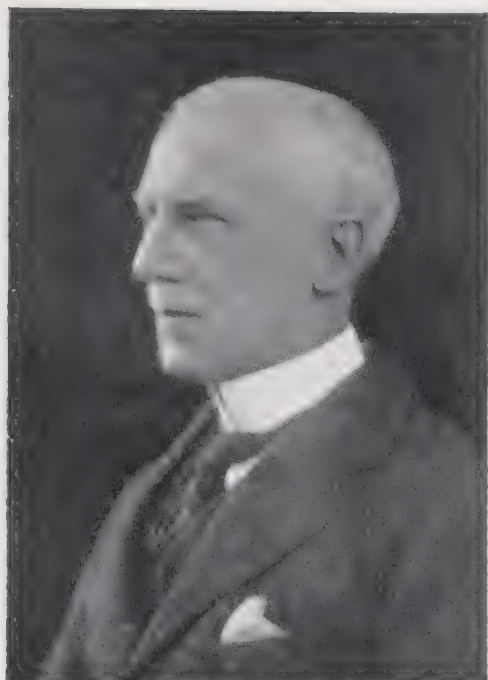


BREWERS' HALL, ADDLE STREET, LONDON.

The Hall of the Brewers' Company which housed the Offices of the Institute until its destruction by enemy action in 1940.



LYTTEL HALL, NUTFIELD, SURREY.
Purchased and equipped as the Brewing Industry Research Foundation in 1951.



C. H. BABINGTON.

First President, 1904. Vice-President, 1905. Honorary Member, 1936. Chairman, Brewers' Society, 1910-12.



SIR WILLIAM WATERS BUTLER, BART.

President, 1905. Honorary Member, 1936. Horae Brown Medal, 1937. Chairman, Brewers' Society, 1907-08.



F. P. WHITBREAD.

President, 1913-15 and 1926-28. Trustee, 1920-41. Horae Brown Medal, 1933. Chairman, Brewers' Society, 1905-07.



COLONEL C. J. NEWBOLD, D.S.O.

Member of Council and of Research Fund Committee, 1938-46. Chairman, Brewers' Society, 1942-45.



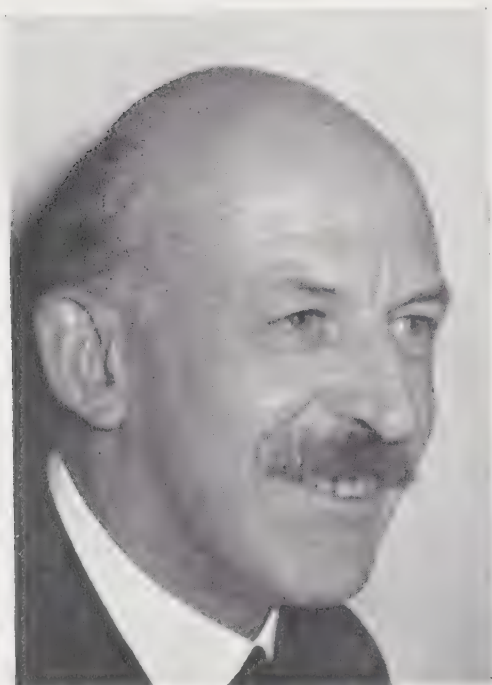
SIR SYDNEY O. NEVILLE.

*Vice-President, 1918. President, 1919-21. First
Chairman, Research Fund Committee, 1920-23.
Chairman, Brewers' Society, 1938-40.*



C. E. W. CHARRINGTON, M.C., M.A.

*President, 1937-39 and 1944-45. Trustee, 1941-51.
Chairman, Brewers' Society, 1933-34.*



COLONEL E. N. BUXTON, M.C.

*Vice-President, 1927. Trustee, 1930. Chairman,
Brewers' Society, 1931-32.*



R. J. B. STOREY.

President, 1928-30. Trustee, 1930-48.



E. M. STROUTS.

Member of Council, 1919-53. Vice-President, 1924-53.



J. STENHOUSE, A.C.G.I.

Vice-President, 1922. President, 1932-34. Chairman, Research Fund Committee, 1933-37.



CHRISTOPHER GEORGE, M.A.

President, 1934-36.



WALTER SCOTT, J.P.

President, 1945-47.



JOHN DOULL.

Hon. Secretary, Scottish Section, from its inception in 1904 until 1929. Member of Council, 1906-29.



C. F. HYDE.

Original member of the North of England Section. Member of Council for twenty-four years.



W. W. BURTON.

Hon. Secretary, North of England Section, 1909-46.



H. M. CHUBB.

Member of Council for twenty-four years. Three times Chairman, Yorkshire and North-Eastern Section.



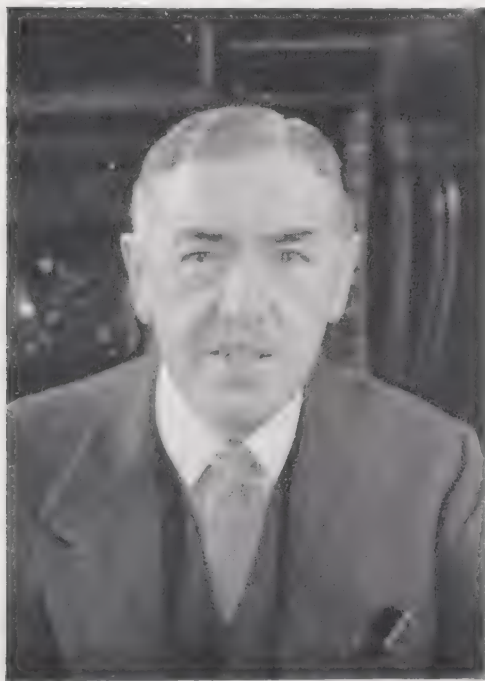
E. F. BARCLAY.

President, 1909-10. Chairman, Brewers' Society, 1917-18.



R. V. REID.

President, 1924-26. Member of Council representing Scottish Section for 37 years.



COLONEL J. H. PORTER, D.S.O.

President, 1939-41. Chairman, Brewers' Society, 1953-55.



M. V. COURAGE.

President, 1947-52. Vice-President, 1952.



W. A. RILEY, J.P.
*Vice-President, 1925-49. Member of the Council,
 1911-48.*



MAJOR L. H. FINCH, M.B.E., T.D.
*Member of the Council representing Burton-on-Trent
 Section, 1922-53.*



S. H. THOMPSON.
*Member of Council representing Midland Counties
 Section, 1926-52.*



J. G. DANIELL.
*Member of Council representing London Section for
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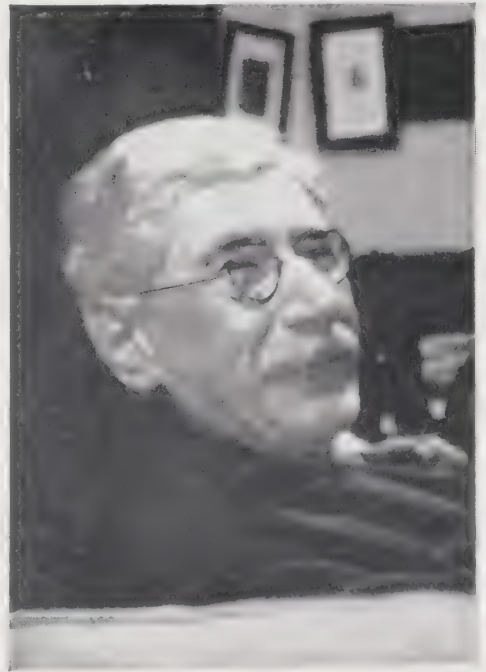
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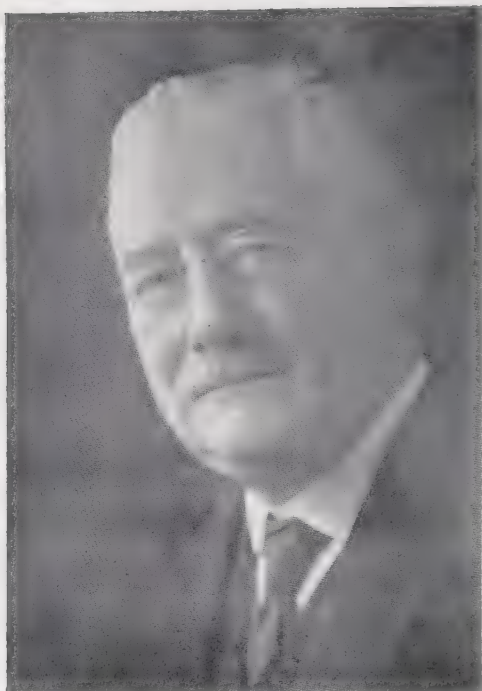


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